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ORIGINAL ARTICLES.

THE SURGICAL TREATMENT OF UTERINE MYOMATA.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In the rapid progress of events, the timid steps earlier taken in a most careful way, in the devising of better surgical methods, are now naturally considered of little importance. However, historical studies are of interest and value: of interest, in that they show the thoughtful, reflective judgment of men who considered the gravity of the problems upon which a life is ever more or less dependent; of value, since they point out the way, open ever, but only, to the real student who seeks the ideal, regardless of self-interest; and especially in the fruitage of averted suffering and the saving of life beyond the hope of previous generations.

Based upon ample data, collected with painstaking care, a generation ago, military surgery was rewritten and stands today as the enduring monument of my early master, the late George A. Otis, Surgeon U. S. Army. The slowly developing interest in the surgical diseases of women was held in abeyance, as a seeming side issue of little importance at the close of our late war, and the few more courageous men who presumed to devote special study to this branch of surgery were looked down upon as men of doubtful importance, by the body politic, and unworthy the highest consideration of the public. The late Dr. Gilman Kimball of Lowell[1] appears to have been the first surgeon in the world who deliberately determined to attempt the removal of a large uterine myoma by abdominal section, which was followed by the recovery of the patient, and who planned step by step the procedures which he regarded essential to its accomplishment; and yet such was the criticism of his well meaning contemporaries that I was personally advised to avoid his acquaintance as detrimental to my professional repute.

Dr. W. Burnham of Lowell, in 1853, only a little time previous to Dr. Kimball's operation, removed a large fibroid tumor, followed by recovery of his patient. However, he began his operation in the belief that it was an ovarian cystoma. Dr. Burnham passed a strong ligature through the neck of the uterus and tied it on each side. Then to make doubly sure against hemorrhage, a ligature was placed round the whole neck. The ovaries were removed. The cervix was dropped and the ligatures were brought out at the lower angle of the wound. They came away during the fifth week. Dr. Kimball operated very much in the same manner, but, eight months later, he reported that the ligatures were still attached. Such was the heroic courage of Dr. Burnham, guided by the conviction that relief should be rendered this unfortunate class of sufferers, that he continued to operate from time to time until 1876, in all fifteen operations with only three recoveries. Heath and Charles Clay of Manchester, England, were doubtless the first who removed uterine fibroids by laparotomy, in 1843 and 1844, but both patients died.

The first Boston surgeon and the third in America to perform suprapubic hysterectomy was Dr. H. R. Storer, Sept. 23, 1865.[2] The criticism of his unwonted daring was almost universal and made so condemnatory that not one of his little circle of assistants was permitted to escape in sharing of it. The short cycle of a generation which has supervened since that period has worked most remarkable changes. In no other department of surgery have such striking victories been won as those now universally accredited to gynesic surgery. Every American surgeon points with pride to our McDowell, who, although described as a frontiersman of the West, profited by his careful Edinburgh training, and in the freedom of his new surroundings dared to think for himself. This opened the way for abdominal surgery with its many present brilliant subdivisions, in which every abdominal organ has been a sharer. It would seem almost invidious to name any of the long series of most distinguished men who have labored to bring about, perhaps the greatest triumph of modern aseptic surgery; the present comparatively safe surgical removal of uterine myomata. Indeed, it is not necessary, since to you the names of these leaders are not alone household words, but their personal influence has been felt and still governs a large share of those whom I have the honor of addressing.

Schroeder, in 1874, advocated the treatment of the pedicle of fibroid tumors by including it in the lower angle of the abdominal wound after the method of Koeberlé of Strasburg, or returning it into the cavity of the abdomen, after ligating or cauterizing it, much in the same way as advised for the treatment of ovarian tumors. In December 1879, he had operated eighteen times with eleven recoveries, and he then advocated the amputation of the uterus at the level of the os internum. The ovarian arteries were ligated on each side, and the cervix was tied in two portions, each including an uterine artery. The uterine stump was cut V-shaped, the muscular walls were closed with coarser, the peritoneal covering with finer, interrupted silk sutures.

In 1880, assisted by my distinguished teacher, Dr. Gilman Kimball of Lowell, I removed the uterus for the first time for a large multiple myoma, where I adopted a modification of Schroeder's method, embodying all that is at present considered essential.

[1] Boston Med. and Surg. Jour., May 3, 1855.

[2] American Journal of Medical Science, June, 1866.

Commencing on one side, I sutured the broad ligament with a double continuous tendon suture, extended so as to include the cervix. The broad ligaments were divided, the peritoneum reflected from either side, the stump cut down conically, and this was covered over by an intrafolding of the peritoneum with a continuous sero-serous animal suture. The suture thus taken intrafolded the peritoneum evenly, while it was itself buried beneath it, leaving no line of infraction of the pelvic peritoneum. Thus the stump, while dropped within the abdomen, was itself *extra-peritoneal*. This method seemed to me so important an improvement upon that of Schroder that I reported it in a paper [3] read at the International Medical Congress, held in London, in 1881. I incorporated it in further detail in my address [4] upon "Fibroid Tumors of the Uterus," as President of the Section of Obstetrics and Diseases of Women, of the AMERICAN MEDICAL ASSOCIATION in 1882. In 1887,[5] I reported still further my experience with this method and emphasized its value. I also pointed out the importance of dealing with the larger number of uterine myoma which develop in such a way as to have really no pedicle. My last special contribution upon this subject was a paper entitled, "The Surgical Treatment of Non-Pedunculated Tumors," read at the AMERICAN MEDICAL ASSOCIATION in May, 1890. Up to that period, in common with nearly every abdominal surgeon, I had considered hemorrhage as the greatest of all dangers, and in order to lessen this, I advocated and used the so-called rubber dam, a thin sheet of rubber with a central reinforced opening which was stretched over the tumor and crowded down as far as possible to its base, around which was placed a constricting rubber ligature. The suggestion of its use occurred to me from noting the admirable service rendered the dentist by the constricting rubber placed around the root of a carious tooth. It served the double purpose of controlling hemorrhage and keeping the abdominal cavity entirely free from surgical contact. This was applicable, however, only to movable tumors with a more or less distinct pedicle.

Dr. L. E. Stimson certainly made one of the most valuable contributions upon this subject by ligating the ovaries and uterine arteries preliminary to hysterectomy. He did this at first in order to perform a complete hysterectomy, but the teaching that hemorrhage might be controlled by the ligation of these arteries bore immediate fruitage in lessening the almost universal fear by the surgeon of the danger of hemorrhage. One has only to observe the enormous dilatation of the venous plexus, commonly accompanying large uterine myoma, to understand the reason of the fear and the real danger occurring from hemorrhage. It was on this account that I included the entire broad ligaments on either side by my method of double continuous en masse suturing.

In 1892, Dr. B. F. Baer made his valuable contribution to this subject, in which he modified the operation of Stimson by ligating the arteries independently, while he left the cervical structures as a pedicle, quite in accordance with the method which I advocated. The adoption of new methods with the improvement of aseptic procedures has firmly established hysterectomy as a well-advised and comparatively safe operation for the removal of large uterine myoma.

Dr. Joseph Eastman of Indianapolis has done valuable work in the removal of the uterus, including the cervix for fibroid tumors. He met with exceptional success in so doing, and has devised instruments of special type, which are valuable accessories for this purpose.

In an exceedingly interesting article, Dr. Charles P. Noble of Philadelphia, upon "The Development and the Present Status of Hysterectomy for Fibroid Myomata," gives Dr. Eastman the credit of first covering the pedicle with a double flap of peritoneum, which he states was similar to an operation of Dr. Emmett, performed in 1884. It will be noted, however, that I had deliberately effected this for the purpose of making the stump extraperitoneal in 1880, and published the same in 1881 and 1882.

The method of intraperitoneal fixation of the pedicle was of very slow adoption owing to the excessive fear of surgeons lest secondary hemorrhage might ensue. The fixation of the pedicle in the abdominal wall placed it where it could be kept under observation, but the mortality was so great that various ingenious modifications of this method were devised. One of the most interesting of these was by Dr. H. R. Storer of Boston, who sewed the pedicle, including also the ovarian tumors, into the lower angle of the abdominal wound for the purpose of shutting off the peritoneal cavity. This he called "pocketing the pedicle."[6] This operation was revived by Dr. H. A. Kelley of Baltimore, in 1888, with the addition of the use of a temporary elastic ligature.

The first operation for the removal of the uterus, including the cervix (total extirpation), for fibromata, is accredited to Dr. Mary Dixon Jones of Brooklyn, N. Y., who operated Feb. 16, 1888, whereas Dr. Eastman's first total extirpation bears date of August, 1889.

Dr. H. A. Kelley furnishes a valuable contribution with the title "Hysterectomy by Continuous Incision from Left to Right, or from Right to Left," November, 1895. It shortens the time of the operation by commencing at one side, securing the vessels, dividing the cervix, and under tension made upon the tumor, the uterine artery of the opposite side is easily exposed and seized with forceps. The division is continued until the ovarian artery is the last vessel secured. The vessels are ligated, the stump covered over by a continuous over-and-over-suture of catgut. Emphasis is made upon the importance of commencing the incision upon the side where the ovarian vessels and tube are most accessible.

There is an undoubted gain by this method in the saving of time, and the certitude of work accomplished, and very generally this is greatly facilitated by placing the patient in the Trendelenburg position. Although this paper is not intended to be an historical treatise upon the subject, and as a consequent, many of the most worthy workers in this field have not been mentioned, it seemed to me necessary to follow the line of thought the development of which has brought the present operation of hysterectomy to such greatly reduced rate of mortality, a danger not so very much greater than that attending the removal of an ovarian cystoma. It is very probable that further modifications of this operation will be adopted in the hope of giving still greater safety and satis-

[3] Trans. International Med. Congress, 1881, Vol. ii, pp. 233.

[4] Trans. Amer. Med. Asso., Vol. xxxiii, pp. 203, 204.

[5] Histology and Surgical Treatment of Uterine Myoma. President's address, Sect. of Gynecology, Ninth International Med. Congres, 1887. Vol. xi, pp. 835-845.

[6] Journal of Gynecological Society Vol. i, p. 150, Sept. 23, 1867.

factory results. The greatest reason, however, why recent statistics show such marvelous improvement lies in the fact, just as pertains to the history of ovarian cystoma, of the greater confidence of the surgeon, who, as a consequent, advises early operation for comparatively small tumors, which, only a brief period ago, would have been let alone without discussion of operative measures.

The ovarian cystoma which has obtained any very considerable size is likely to have become adherent, and these complications render ovariotomy much more serious and dangerous than the treatment of the pedicle per se. On the contrary, the enlarging myomatous uterus is not likely to form adhesions until at a late period of its development, and its removal is attended with danger chiefly because of the basic structures which must be divided. A supravaginal hysterectomy, therefore, must necessarily involve much greater difficulty than the separation of the ovarian pedicle.

In a very large percentage of cases taken under advisement for operation the pelvic basin is filled with more or less of these growths, and the functions of the pelvic organs are so interfered with as to demand relief. Here adhesions are common, the relationship of the structures disarranged, the intestines and bladder not rarely involved, and the ureters are in dangerous proximity to the growth to be removed. Such cases will ever tax the most resourceful of operators, and the greater the experience the more will the surgeon consider the responsibility of his duty. Oftentimes multiple masses are to be enucleated until at last the uterine arteries are seized upon well down in the cervical region. After the tumor has been removed, the vessels ligated, not seldom a very important part of the operation consists in the reconstruction of the pelvic peritoneum. I exercise more and more care in this direction with each succeeding year.

Hemorrhage, the former greatest danger of the surgeon, is now practically eliminated from the problem, and septic infection, the peritonitis of the earlier day, is almost equally rare. In my last hundred hysterectomies I have not had a single death from hemorrhage or from septic infection. Almost the only cause of death has arisen from intestinal obstruction, induced by infractions upon the peritoneal surfaces, and it is in this I am exercising the greatest care. I recognize the value and importance of time to the patient in prolonged operations, but the rapid surgeon never hurries. "Well done is quick enough done," was the maxim of the elder Crosby. The surgeon should ever be assured of the integrity of the intestinal canal, and as far as possible avoid conditions which may induce obstruction. Adherent omentum not seldom leaves rents through which a loop of small intestine may easily slip. All adhesions of the peritoneum should be closed. This is easily effected by suturing in the same manner as that employed in covering the cervix with the intrafolded peritoneum. A fine tendon is selected and by a loop-stitch fastened in one end of the adhesion. The full-curved small Hagedorn needle is made to penetrate through the healthy peritoneum a few lines from the edge of the rent and parallel to its long axis. Each stitch is inserted directly opposite the emergence of the preceding one, in the same way on the opposite side of the peritoneal rent, and thus from side to side the suturing is continued until the rent is closed. When drawn upon, this sero-serous suture evenly intrafolds the peritoneum, while it is itself completely buried. An exposed ureter may be easily covered in this way, and when the pelvic peritoneum is much disorganized I have not seldom sutured the peritoneum of the entire pelvic basin in even juxtaposition quite to the pelvic brim. I emphasize this method of closing the peritoneum, especially of the pelvis, since I am sure by it little harm can come from the future disarrangement of the organs; that it does not interfere with the rectum or bladder, and that it does materially lessen the really very great danger of adhesive processes so liable to induce obstruction of the intestines and subsequent functional discomfort, while it is now recognized as by far the most common cause of acute intestinal obstruction.

The variety of methods under discussion at the present time is limited chiefly to suprapubic hysterectomy as above described; to the removal of the uterus, including the cervix; to the saving of as much of the uterine tissue as possible when the myomata are small and not too numerous, and finally to the advantage of leaving the adnexa (the ovaries and tubes) when the conditions will permit. Each of these different methods have certain possible advantages. As I believe, for reasons already stated, the larger number of hysterectomies for uterine myoma should have a certain portion of the cervical tissue left. Generally the operation is less difficult and more rapid. The remaining structures furnish a means of support to both bladder and rectum, the vagina is uninjured and the relations of the pelvic organs are maintained in easy mobility, conditions having a value in marital life of great importance. The objections to this are the possibilities of infection of the wound through the cervical canal and lack of drainage, where conditions of the pelvic basin may render drainage an important factor. To my mind these criticisms are, at the most, of minor importance, since the cervical canal can easily be disinfected or the entire mucosa removed. Should drainage seem desirable, and each year this is considered of less importance, it can easily be provided for by an opening through the posterior fornix.

There are conditions in which it may be of decided advantage to remove the entire uterus. Doyen of France has modified the technic of complete hysterectomy, which, briefly, consists in making forcible tension upon the uterus and myoma by drawing it forward over the pubis through the abdominal opening and then incising the vagina posteriorly. This permits pulling the cervix upward into the abdomen, which makes tension upon the broad ligaments. First one is divided and then the attachments of the uterus to the bladder are separated, and lastly the other broad ligament is divided. These are seized and held by assistants during the operation and until the arteries can be independently secured. It will be noted that by such a measure the operative field is brought clearly into vision, greater safety as well as celerity attained, since the relationship of the ureters, intestines and bladder can be determined with much greater certitude. After hysterectomy has been thus performed, complete peritoneal closure of the pelvic basin may be made if considered advantageous. This leaves a wound open only from below, which may be lightly packed with iodoform gauze. Dr. W. P. Allen of Cleveland has contributed a valuable article upon complete hysterectomy, in which he advocates two modi-

fications of Doyen's method, both preliminary to the abdominal section. The cervix is curetted and packed with antiseptic gauze, the vagina is carefully disinfected, the cervix seized with a strong pair of vulsellum forceps and drawn downward. With the cautery the vaginal tissue about the cervix is dissected. The advantages claimed are: "1. Asepsis is secured with more certainty than by any other method. 2. The division of the vaginal vault by the cautery is in most cases performed quickly and without hemorrhage. If the cervix be very short or difficult to reach, as is sometimes the case when the fibroid is developed in the lower part of the uterus, its separation by the cautery may be unusually difficult. It can, however, usually be accomplished." . . . "The abdominal cavity is not opened from below. A long pair of slender, curved forceps is now used to seize the tissue just behind the cervix at the point at which it is divided by the cautery. The object of this pair of forceps is that when the abdomen is opened, the forceps may be pushed upward into Douglas' cul-de-sac, and marking absolutely the vault of the vagina, enable the surgeon with certainty and rapidity to open downward into the vagina. With long vulsellum forceps the cervix is firmly seized and drawn upward and backward into the abdominal cavity." Dr. Allen thinks the operation of Dr. Doyen as thus modified greatly shortens the time consumed in the removal of the uterus, while the intestines, ureters and bladder are much more easily avoided, and he recommends it for favorable consideration.

By general consensus of opinion, little by little, the cautery has been relegated to history, and at present, when asepsis makes a certitude of primary union, the use of any means which leaves of necessity necrosed structures should, if possible, be avoided. Dr. Eastman's hysterectomy staff easily fulfills every purpose sought to be attained by Dr. Allen with his fixation forceps to mark the point of posterior vaginal section.

It not seldom happens that uterine myoma are found which may be advantageously removed, leaving the uterus more or less damaged or deformed. Dr. A. Martin of Berlin was among the first and most earnest advocates of myomectomy. More than ten years ago this seemed to me the ideal method, and I examined all the cabinet specimens preserved in the Boston and New York museums for the purpose of determining its possibility. I also made a large series of sections of the smaller growths in order to establish the relation between the tumor and its parenchyma, the so-called capsule.

The accompanying photographs will show that this is developed from the deformed surrounding uterine muscular structure, and that the tumor itself usually receives its nutrition from it rather than by vessels directly penetrating its substance. In one instance, however, I succeeded in injecting the vessels of the tumor through the uterine arteries. Unfortunately, it happens that in the great majority of instances the myomata develop from a considerable number of independent centers, whatever may have been their cause and as a consequent the uterus can not be preserved intact, and the invading growths removed. In exceptional cases this may and should be done. In common with other operators I have not infrequently removed a considerable number of these growths, and do not recall a single case where convalescence did not easily follow. The constricting rubber-dam is often of much service in this operation, since it may make the operation bloodless. It is my habit to occlude the cavity with continuous tendon sutures and introflect the divided peritoneal surface over it. The pendulum of opinion upon this operation swings to both extremes. Dr. Noble above quoted, closes his paper as follows: "Myomectomy is the ideal operation for fibroid tumors. The next advance in the treatment of fibroid tumors will be the acceptance of early operation, with the definite purpose of substituting myomectomy for hysterectomy in women of child-bearing age in cases having a small number of fibroid nodules." At the last meeting of the British Gynecological Society, Dr. W. Alexander of Liverpool urged the enucleation of multiple uterine myoma as a favorite alternative operation to hysterectomy, and that it being a non-mutilative operation it presented a marked advantage over total removal of the uterus. The society did not accept his views, but rather Mr. Bland-Sutton's terse summary, who claimed "that in most cases such tumors were developed after the child-bearing period, when the uterus was a non-important organ. He felt sure that a woman was much better off with ovaries and no uterus than with uterus and no ovaries." Dr. J. F. Baldwin of Columbus, Ohio, advocates in abdominal hysterectomy the fixation of the round ligament between the cervical flaps, which holds it *in situ* by buried animal sutures. He claims the advantage to be in the fixation of the parts and preventing prolapse of cervical stump in the vagina.

There can be no doubt but that the improved operations for the comparatively safe removal of large uterine myomata had not alone its inception, but its development to its present successful status in very much the larger degree with American surgeons, the credit of which should be given to American surgery. Within the last half decade, under the leadership of Doyen, Segmund, Richelot and others, vaginal hysterectomy has been successfully developed, especially for the removal of small uterine growths, quite beyond anything attemped in this country in this operation. Vaginal hysterectomy for cancer is more especially a German operation in its origin. Intrauterine myoma for a long period have been successfully removed per vagina by morcellement, even when of very considerable size. At an earlier period I removed a number such growths by this method, one weighing four pounds, where I am convinced I should now perform abdominal hysterectomy, and this because of our greater confidence in an improved technic for abdominal hysterectomy. The French school have advised special methods for operating upon the pelvic structures through the vagina, here usually performed by the abdominal route. Their brilliant successes were at once accepted with approval by some surgeons in America and have at present their advocates. It is very probable, however, that this vaginal operation has been popular in France in a large degree owing to their comparative unfamiliarity with abdominal hysterectomy, which they are pleased to style "the American operation."

Blind surgery is bad surgery, and on this account vaginal operations upon the pelvis must ever be held to a certain degree in criticism. If, for instance, a small uterine myoma is to be removed, the choice of the vaginal route, under certain conditions, might advantageously be made. In a large degree this too is an American operation, first advocated and per-

formed by our lamented fellow-countryman, Dr. Robert Battey of Georgia. In 1879 I first removed a fibroid tumor through Douglas' cul-de-sac (a myomectomy), saving the uterus. However, in much the larger class of cases, where it is judged wise to remove uterine myomata sufficiently small to accomplish the work through the vagina, it is undoubtedly better to operate by the abdominal route, since this is the class of cases most suitable for myomectomy.

Little further need be said in reference to the technic of the operation. It must be conducted as far as possible under strict aseptic conditions. An uninfected abdominal cavity, left in good condition, should be closed without drainage. The abdominal

Fig. 1.—1, small uterine myoma. Singular resemblance to a fetal head. 2, uterine cavity. Specimen injected, vessels much enlarged.

Fig. 3.—Section from just over a small myoma. The enlarging blood-vessels and capsular formation well shown.

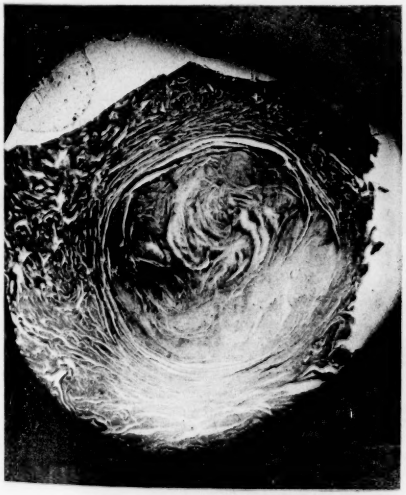

Fig. 2.—Uterine myoma with multiple centers. Capsule formation well pronounced.

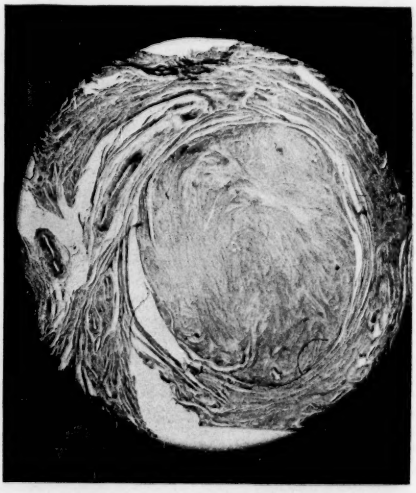

Fig. 4.—Large surrounding vessels. Capsule well developed. Vessels greatly enlarged.

wall is reconstructed by independent lines of continuous buried tendon sutures. I consider the peritoneum and thick fascia can be much more satisfactorily reunited by the use of the double continuous tendon suture. A subcuticular, fine tendon suture is much to be preferred for holding in coaptation the edges of the skin. The final dressing consists in the application of contractile collodion, holding in solution iodoform, reinforced by a few fibers of absorbent cotton. Unless the tumor is of exceptional size the patient is usually more comfortable without the application of an abdominal bandage. The advan-

Fig. 5.—Double uterine myoma. Capsules well developed. Tumors slightly vascular.

Fig. 7.—Calcified tumor. Infiltration by lime salts. Uterine myoma showing process of calcification. The dark spots mark the lime deposit.

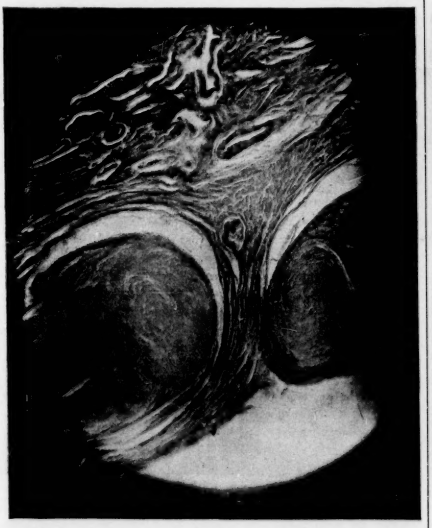

Fig. 6.—Triple uterine myoma. Adjacent vessels enormously ectasic. Taken from a uterus not greatly enlarged but studded with multiple growths.

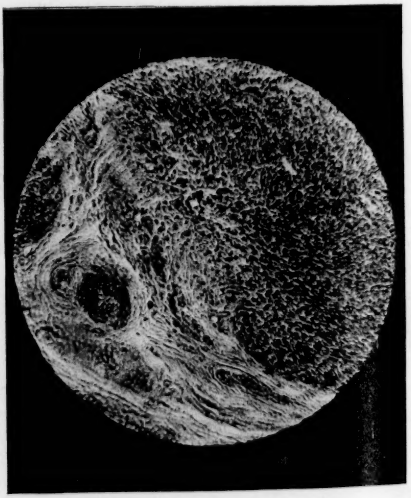

Fig. 8.—Section shows the cell disposition. In the larger portion the cells are cut transversely.

tage derived from suturing the abdominal wound in layers is so apparent that I find its adoption is becoming more and more common. I have thus sutured since my first advocacy of buried animal sutures quite twenty-five years ago, and for fifteen years with no other dressing than the collodion seal. Subsequent hernia does not occur, and in over eight hundred laparotomies I recall but one case of subsequent hernia, and this in a case where the abdominal wall had become excessively thin from a large fibroid tumor.

A final question for consideration is the ever recurrent one: When shall we operate? As in ovarian cystoma, so here the pendulum of opinion constantly varies. Without doubt the larger number of abdominal surgeons are operating on cases today, which they would have judged ill-advised four years ago. In young women, small growths which cause pain, excessive menstruation and interfere with the functions of the pelvic organs should be no longer subject to unsatisfactory medication, since operation in these cases gives the lowest rate of mortality, and not seldom by a myomectomy results in complete restoration of unmutilated organs with restored functions. There is a general consensus of opinion that the patient will profit less by the cessation of the menopause than was earlier believed.

Many of the more dangerous growths develop comparatively late in life, a considerable percentage of which go on to most extraordinary development regardless of menstruation. When the patient is still within the cycle of menstrual life and the ovaries comparatively healthy, it is probably wiser not to remove them. It is my own belief that in the future a wise conservatism will give an approval for operative measures upon a very considerable class of invalids, now usually permitted to drag out a more or less wretched life of suffering. I would, however, urge the limitation of the operation to the practice of men who have equipped themselves in a special manner for this class of surgery, since it is not alone theoretic knowledge that he must master, but more especially a technic that shall make him at once an artisan and an artist.

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THE INDICATIONS FOR PLASTIC SURGERY UPON THE CERVIX UTERI, TRACHELOPLASTY, WITH A NEW METHOD OF OPERATING.

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The operation known as trachelorrhaphy or Emmet's operation, has been in vogue for thirty-five years. It has had a brilliant history and has won honors for the originator wherever gynecology is practiced, but like many good things it is not only capable of improvement, but has of late been quite generally superseded by operations in the nature of amputation; plastic work looking toward removal of diseased tissue, restoration of organic function, and remodeling of the cervix to as nearly normal outlines as possible. These operations are commonly known as amputation of the cervix, but only for want of a better name, since it suggests the crudeness of the former excision of the neck of the uterus, and in no way conveys all that is comprehended in the newer work. There is a wave of interest abroad concerning these improved methods, and many reports of admirable work are being made in foreign journals. In our own country, Emmet himself concedes that his original operation for pathologic conditions following laceration has had its day, and suggests for it honorable retirement to a few well-selected cases. On pages 351–2 of the *Am. Gyn. and Obstet. Journal*, Vol. ii, 1897, he says: "Since the writer's attention has been drawn more particularly to the subject of amputation of the cervix uteri as a necessary operation after laceration, he has realized that a very important change for the better has taken place within the past twenty years in the practice of obstetrics. As the custom has now become a general one to employ every antiseptic precaution in obstetric practice, when laceration of the cervix occurs the efforts of nature thus assisted are sufficient in all but the worst cases to fully repair a very large proportion of tears. The writer [Emmet] has also recognized the fact that within a few years past a comparatively smaller number of this lesion which need 'Emmet's operation' for repairing the cervix are now seen in practice. The condition has become directly reversed within a few years past, and *now*, with but few exceptions, amputation is the proper means to employ. 'Emmet's operation' fully filled its place under the then existing circumstances and still does so whenever indicated, but the author (Emmet) now offers through the publication of this paper, an equally original operation (amputation) for the relief of pathologic laceration of the cervix as it is now met with." Elsewhere in the same article under the title, "When to Amputate in Preference to Repair of a Lacerated Cervix by the Usual Method," Dr. Emmet says: "For many years I held the opinion that it was possible, in almost every instance, by careful local and general treatment to restore in time the lacerated tissues to so near the normal condition, that when the operation had been properly performed, complete restoration would eventually take place with the result of bringing about involution of the uterus. But I am now of the opinion that there are exceptional cases to this rule, where under certain conditions it is better surgery to amputate a portion or the whole cervix, provided the dis-

eased tissues are completely removed and the wound afterward treated in the manner I shall describe."

While agreeing with the gifted author as to the desirability of the amputating operation, I claim that that mode of procedure is most excellent which requires least preparatory and after treatment, and which exacts least in the way of time and patience from patient and physician. There is a reaction against the tedium of routine local treatment that bids fair almost to go too far and abrogate it altogether. It is a detriment to any patient to be subjected to prolonged topical treatment. It has the tendency to establish the habit of invalidism, and to fix the attention inward, which is not a healthy stimulus to recuperation. I have for some years sought to do operative work of such a character that as much as possible may be accomplished at one sitting, and the patient led to expect prompt recovery and encouraged to consider herself well and free from bondage to the gynecologic chair. My results have so far been satisfactory, and it is to call attention to a method of cervical operation which meets these requirements that I have selected this subject. My manner of operating differs materially from any so far described, and possesses certain advantages which I hope will commend themselves in comparison with existing modes. As yet, there is no unity in choice of technique. Dr. Von Ramdohr said recently (*Am. Gyn. and Obstet. Jour.*, page 711): "As long as there are twenty-five methods of doing things none of them is good." This has a measure of truth in it, but the progress of surgery is marked by the passing of modification after modification of good methods, and only in such a way can perfection be reached.

The poor results complained of by some good operators with amputating operations, I believe to be due to faulty technique. That is to say that following the older methods of Schroeder, Emmet, Pozzi and others so far described, does not attain what is desired, because these methods through inherent faults do not meet the indications. The following criticism is made by Dr. A. Palmer Dudley of New York.[1] "In closing the wound one is very apt to narrow the canal to the extent of obstructing the escape of the normal discharges from the uterus, thereby injuring the woman instead of benefiting her. Many here can recall cases in which, before operating for laceration of the cervix, they could recognize no disease of the uterine appendages while afterward disease developed. Why? Simply because in repairing the cervix they closed it, prevented the normal discharge from the uterus, induced continual passive congestion of the endometrium, and the disease then traveled up the tubes."

Early in the history of the operation Pauly is said to have declared that: "Of all surgical operations the excision of the neck of the womb has hitherto been the most murderous."

Improvement in technique in many quarters has advanced the operation rapidly in favor, and it is due to the literature of gynecologic surgery that such progress should be duly reported. In giving a description of my own method, I wish to touch upon the indications for which it is used, and to call attention to the development of opinion in this regard.

Dr. Thomas, in the fourth edition of his work on "Diseases of Woman," published more than two decades ago, gives as indications: "Malignant disease, great enlargement from cervical hyperplasia, longitudinal cervical hypertrophy, conical and projecting cervix and granular or cystic degeneration of intractable character." I have already spoken of the manner in which present authority sanctions its use in cases of laceration, and in addition we now consider chronic metritis and cervicitis, certain forms of displacement, what is known as congenital elongation or infantile uteri and stenosis as calling for such operations. Concerning the latter I find this comment in Gould's Year Book for 1898, page 534: "True cervical stenosis is a comparatively rare disease, it exists most often in the mind of the physician."

Notwithstanding this formidable comment upon a former paper of mine presented to this society, a large experience in the reality of the thing only confirms me in the opinion that cervical stenosis, whether of traumatic or congenital (?) origin, is yet a potent factor in the etiology of much pelvic pathology and an indication of radical error in the hygiene and growth of women.

What is known as congenital stenosis is rarely the result of embryonic divergence, but rather persistence of the infantile condition through lack of proper development at the developmental period.

In advocating amputation of the cervix for inflammatory conditions L. Touvenaint (France) says: "The curette, which gives excellent results in chronic corporeal endometritis, is altogether insufficient in cervical endometritis. The operation gives brilliant results preceded by curettage. We say 'preceded by curettage' because it is rarely the case that inflammation of the cervix has not been propogated to the cavity of the body, and the endometritis become general. It has certainly been established that amputation is the operation of choice." He further says: "Amputation of the cervix is not done solely for the sake of removing a part of the organ; it possesses also the advantages of inducing profound modification in the vitality of the entire uterus, so that this undergoes a veritable involution." Mundé, in an article on trachelorrhaphy in 1889, said: "When a superficial layer of an organ which is affected by hypertrophy is cut off, a marked tendency to diminution in the bulk of the remaining tissue shows itself." Curettage alone can not accomplish this result, although it can do much, and in connection with excision is a valuable adjunct. Not only the cervix, but its mucous lining differs from that of the uterus above in essential particulars, and chronic inflammation creates a dense, firm tissue with deep glandular involvement which only a sharp curette thoroughly used can remove. Such removal is apt to result in constriction of the canal amounting to a severe stenosis or even atresia unless followed by tedious and objectionable after-treatment. As I have said, the ideal operation should attain restoration of physiologic as well as anatomic conditions, and with the smallest expenditure of time and the least possible manipulation.

The following are details of the method which I have found meet these requirements better than any of which I know. The patient, prepared as for any minor gynecologic or plastic surgery, is placed in the lithotomy (extreme dorsal) or Sim's position, and the cervix drawn down with the bullet forceps or the double tenaculum. The cervix is dilated and the uterus curetted in the usual manner. Curettage is used only when the indications for its employment exist, but these are so constant as to make it virtually the rule. The blades of the bullet-forceps are then

[1] Tr. Gyn. Soc., Vol xx, page 305.

reversed and replaced within the cervix so that their points are directed laterally from within outward. By using them in this manner traction is made upon the inner area of the cervix leaving the anterior and posterior walls free for making the flaps. The cervix is now transfixed by the knife here exhibited, (Fig. 1*a*.) and a clean cut made from above downward, first in the posterior lip. (Fig. 1.)

The anterior lip is transfixed in a similar manner about 1 cm. or 1½ cm. in front of the other and cut in the same way.

The intervening plug of diseased tissue is now removed by a single cut or two of the curved scissors, the bullet-forceps having been changed to a lower position to allow of this. (Fig. 2.) If the flaps have been properly made they will now fall together, (Fig.

FIGURE 1.

3) and inward, so as to assume the appearance of a normal cervix, and will require only the simplest suturing to keep them in this position. The first suture is passed through the center of the anterior flap a centimeter or more from its cut edge and brought out about three-fourths of a centimeter within the cervical canal. Two parallel stitches are now placed at each angle of the cervical canal. Silkworm gut is the suture material which I commonly use.

The posterior lip is similarly treated, except that it is somewhat easier in this situation to pass the sutures from within outward rather than the reverse, as in sewing the anterior lip. Two sutures are now passed, as in trachelorrhaphy, through the outer angles of the wound, which gap slightly after the turning in of the flaps. For nice adjustment of the stitches and for ease in removal I am in the habit of treating them as follows: In tying the sutures one end of each is left long, and these long ends are grouped by tying them together according to their location. The three anterior sutures form one group, the three posteriors one group, and the two lateral sutures are tied together, a pair on each side, making four groups in all. (Fig. 4.)

FIGURE 2.

A uterine tampon of iodoform gauze or wicking is now inserted by means of this forceps and tampon-carrier. A projecting strand is attached to the vaginal tampon (also of gauze) in order that both may be removed without undue disturbance of the

parts. If no accessory work is done the usual perineal dressings are applied and the patient put to bed.

The external genitals are bathed with antiseptics after micturition but no douching of vagina or disturbance of tampons is allowed until the second or third day, when the entire tampon is removed and not replaced. Vaginal douches of 1-4000 bichlorid are then used twice daily. The sutures are removed at the end of two weeks, when the patient can be up.

The advantages claimed for this method of operating are: 1. The quickness and ease of operating by the knife here presented, the manner of making the flaps, transcending in certainty and safety of execution the ordinary methods of excision. 2. Clean, smooth-cut surfaces which are obtained without haggling of tissues, always most desirable in plastic surgery. 3. The easy approximation of flaps and the avoidance of all hemorrhage beneath them by deep placing of suture and compression of the flaps. 4. The accurate approximation of mucous membrane to

FIGURE 3.

mucous membrane thus avoiding granulating surfaces, formation of cicatrix and constricting of the canal. This feature, which obtains also in Schroeder's operation and modifications of it, is of great importance and a decided advantage over trachelorrhaphy, especially where the entire cervical mucous membrane is removed. 5. The certainty of obtaining a permanently patulous canal and a well-formed cervix with pronounced reduction of the hyperplastic uterus. 6. The simplicity of the after-treatment.

I would urge the necessity in doing plastic gynecologic work of fortifying it by doing all accessory operations at the same time. The neglect to do necessary complementary operations brings frequent failures. The operation I have described is seldom called for alone. While it will often correct a simple displacement of the uterus due to inflammatory conditions with increased size and weight, by correcting the lesion of the cervix and accompanying metritis and stimulating involution, it is not to be advocated as a substitute for the Alexander or other suspensio-uteri procedures. It will not restore the proper sustaining power of the pelvic floor, but it will be in many cases a valuable adjunct to any operation undertaken for these conditions. Dr. E. E. Montgomery says: "When a condition is due to lesions during the delivery of the patient, we have a large heavy uterus. In any case, in order to restore the patient to a normal condition the first aim should be to reduce the size of the organ. This is best accomplished by amputation of the cervix. The metabolic changes which take place as a result of the operation and the rest in bed will lead to a considerable reduction in size."

Besides correcting existing lesions and encouraging a return to the normal state it may be a determining factor in preventing the progress of malignant disease and the extension of infectious or inflammatory conditions to the adnexa. The cervix is an etiologic factor in many diseases; it is a storehouse for infectious

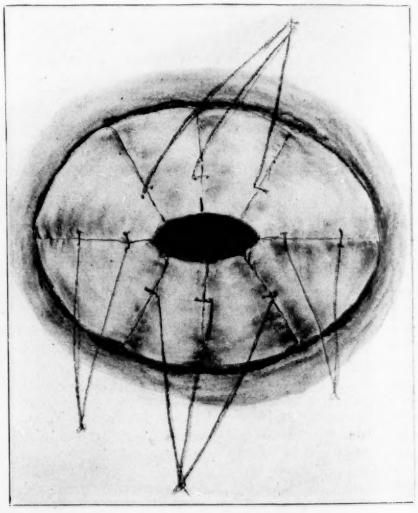

FIGURE 4.

germs; it is the portion of the uterus which suffers most from maldevelopment at puberty, thus causing dysmenorrhea, sterility and concomitant evils; is most frequently injured in childbirth, so that until preventive medicine shall have succeeded in eradicating the more common causes of cervical diseases this organ will continue to offer wide opportunities for plastic surgery of the most careful and progressive kind.

In conclusion, I would offer a suggestion as to the nomenclature of the operation. Amputation of the cervix is as much too narrow a term for such work as trachelorrhaphy is too broad to be monopolized by the operation devised by Dr. Emmet. Much plastic work upon the cervix might be known as trachelorrhaphy but since this name has been applied for so long to one class of methods exclusively, we are forced to find something more distinctly descriptive for the newer work.

Amputation conveys the idea of taking away of an organ, whereas this work is really conservative, plastic surgery; nothing is removed but diseased or adventitious tissue, and I suggest that it be designated in future by the expressive and inclusive term *Trachelo-plasty.*

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ANTERIOR COLPOTOMY WITH REMOVAL OF ONE OVARY AND BOTH TUBES—VAGINAL FIXATION.

Presented to the Section on Obstectrics and Diseases of Women, at the Forty-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM N. SWIFT, M.D.,
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Mrs. L. R., aged 21 years, married two months. Probable gonorrhea two years before; since that time, more or less pelvic pain and very marked pain at menstrual periods. Since marriage has had great pain across lower part of abdomen. Coitus so painful that it became impossible. Examination showed uterus much enlarged, very sensitive, retroflexed and somewhat toward the left side. Enlarged tubes felt on both sides. Operation, Aug. 9, 1897.

The bladder was separated from the uterus without difficulty. Plica opened with scissors. Extensive adhesions over the fundus of uterus and tubes. The uterus was seized with double hooks and delivered through the wound with some difficulty. The left tube and ovary were firmly adherent. The tube was freed from adhesions and on being opened was found to be entirely disorganized and occluded. It was removed, but the ovary was left as it was—normal. The right ovary and tube were bound down by strong adhesions. The ovary contained one large and many small cysts. On section, it showed no normal tissue. The tube was also much thickened, and both ovary and tube were removed. The uterus was fixed by three silkworm gut sutures through the vagina, peritoneum and uterus itself, then peritoneum and vagina on the other side. After these sutures were put in place, the peritoneum was sewed up with a continuous catgut suture, and later the wound in the vagina. After coming out of ether, the patient showed no symptom of shock. She passed urine on the morning of the second day. Examination at present shows no tenderness over scar in the vagina. Uterus small, in normal position, not tender. Some tenderness over left ovary, which can be plainly felt. Patient feels well and has worked since two months after operation. Coitus has not been painful. Has menstruated regularly, with only at times slight pain over region of left ovary.

There are several points in this case that are interesting: First, the question of abdominal or vaginal section in such a case. The chief advantage of the vaginal route is that it is a much less serious operation than abdominal section. There is no abdominal scar with risk of hernia. The patient has much less discomfort and pain immediately after operation. She can turn on her side at once and is usually up in two weeks. Another great advantage in vaginal section is the ease with which any operation can be done on the uterus, tubes or ovaries, after they are delivered. A small vagina makes the operation difficult even with lateral incisions. A fixed uterus that can not be drawn down at all makes the operation impossible.

The method of opening the peritoneal cavity which I employ is practically the one described and practiced by Professor Duhrssen of Berlin. The parts are made as aseptic as possible. The cervix is then dilated, curetted with a sharp curette, afterward with a douche-curette, and washed out with corrosive-sublimate solution (1 to 10000). The anterior lip of the cervix is then seized with the fixature. This instrument, as used by Prof. A. Martin, consists of a stout sound behind and a pair of stout double right-angle hooks in front, set on a broad surface. The sound is inserted into the uterine canal, the double hooks into the anterior lip of the cervix, which is compressed between the two. The uterus is then brought down as far as possible and held forward. An incision about half an inch long is then made through the vaginal mucous membrane at the upper border of the anterior lip of the cervix. One must be careful not to make this incision too high up, for in pulling down the uterus the bladder is displaced and may be wounded. This incision is prolonged with scissors about half an inch on each side. A double tenaculum is put on the vaginal mucous membrane at the center of the incision, and traction made upward. The bladder is then separated from the uterus by the finger, aided at times by the closed points of the scissors.

It is important to carry the dissection well out on each side so as to have the ureters as well as the bladder out of the way. By keeping close to the uterus there is no danger of wounding the bladder. This dissection is carried as far as the internal os. It is a mistake to strip off the peritoneum from the uterus farther up than this point. The fold in the peritoneum may be felt by the finger against the anterior surface of the uterus, and in most cases may be seized between the thumb and finger. An artery clasp is then put on the peritoneum and the peritoneal cavity opened by a small snip with the scissors, as near the uterus as possible. Artery clasps are then put on each side of the opening in the peritoneum and the bladder dissected away from the peritoneum still farther. As the bladder is pushed away, the peritoneum is slit up and clamps put on each side as guides. A pair of double hooks are put on the vaginal mucous membrane about half an inch below the urethra. The middle point of the vaginal mucous membrane in the transverse incision is seized with forceps. Traction is made with both instruments and the ridge made in the mucous membrane is slit up with scissors. The triangular flaps of vaginal mucous membrane formed by the transverse and longitudinal incisions are then dissected away from the bladder. This usually peels off easily with the shut points of the scissors. If vaginal fixation is to be done, the sutures are then inserted on each side through vaginal mucous membrane and peritoneum. I began by using silkworm gut, but since my first two cases have used catgut, the silkworm being rather troublesome to remove. This incision gives a wound extending from the cervix to the urethra, and laterally about an inch on each side of the cervix.

The examination of the uterus and adnexa is next

made. The uterus is then seized with stout double hooks—I much prefer right-angle hooks, as they do not pull out so readily. The fixature is removed and the cervix pushed back with the speculum. The uterus is then delivered through the wound, any adhesions being separated at the same time with the finger. When the uterine tissue is soft the double hooks may tear out several times before the uterus is finally delivered. The first hooks inserted are usually too low and the uterus has to be seized several times before it is pulled out. In this manipulation the uterine tissue may be a good deal torn. The tears should be at once sewed up with a fine needle and catgut. No ill effects come from these so far as I have seen. This gives ready access to the uterus, tubes and ovaries, either for their removal or for the excision of diseased portions. The tubes may be probed, and small cysts of the ovaries opened and curetted. After whatever is indicated has been done, the fixation suture on each side is passed around the round ligament at its base, close to the uterus. The uterus is then replaced and the end of the fixation suture on each side is passed through the peritoneum and the vaginal mucous membrane. The rent in the peritoneum should then be united with a continuous suture of fine catgut. If this is done no raw surface is left, and the adhesions holding the uterus forward will only be between the two layers of peritoneum. The wound in the vagina is then sewed up with a continuous catgut suture. Amputation of the cervix may be done if indicated. Finally the fixation sutures are pulled tight and tied.

The retention of the left ovary when the tube was removed is an interesting point in this case. I am being constantly more impressed by the importance of the general nervous disturbance that follows the removal of both ovaries in comparatively young women. The mental effect in these cases is sometimes very marked. The woman often regrets the operation even when she has relief from much pain. I have seen many cases of marked mental depression following castration. The vasomotor disturbances are usually very striking and the patients suffer very much from them.

If it is possible to spare the woman all these ills by leaving even a part of an ovary that is healthy, ought it not to be done in every case? My case shows that when an ovary is left and both tubes are removed, menstruation goes on with little discomfort. I am convinced that leaving the ovary has made an immense difference to the well-being and happiness of this woman.

SOME OF THE CAUSES OF NERVOUS DISTURBANCES.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY JOSEPH EASTMAN, M.D.
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Mr. Chairman and Gentlemen:—I would rather this afternoon be an attentive listener, and be instructed, than attempt to instruct. I was much pleased with the idea of uniting specialties rather than subdividing them. There is certainly a great advantage in reciprocity in connection with the specialty of neurology and that of gynecology. I have this conviction very forcibly impressed upon me every day when I am at work, because of the extreme difficulty encountered in determining whether, in a given case, the disease from which my patient suffers is a local expression of a general neurasthenia, or whether the neurasthenia is the expression of a local pelvic condition. The title upon the program is a little different from that which I gave the Secretary. I said I would speak of the causes of some pelvic diseases which had to do with nervous conditions. It is not by any means certain, as has been supposed, that every ovary which had prominent upon its surface a Graafian follicle, when removed, was cystic. Some practitioners would have us believe that the uterus and ovaries produce nearly all pelvic disturbances. There are other causes to which I shall refer. The relation of uterus and ovaries to this subject has been thoroughly gone over by those who have preceded me.

In a very able article written by my friend, Dr. Etheridge of Chicago, published some months ago, he shows conclusively that a lacerated perineum, although so slight as to be almost imperceptible, does in many cases continue to so disturb the nervous centers that decided neurasthenia may result. He shows also very conclusively that repair of some of these perinea materially benefits the patient, and in many cases cures neurasthenics who have passed through the hands of other specialists, who could detect nothing of the kind. I will couch my words in as modest language as I can, yet I hope that none of the lady physicians present will think me immodest when I speak of such things as concern the happiness of women, women who are the life and peace, and joy and happiness of our homes, and such conditions as send women not only to the gynecologist, but to the insane asylum and to the grave.

Dr. Thomas, in his work on "Diseases of Women," speaking of some of the sequelæ of lacerated perinea, makes a remarkable statement. As among the things which may result, he speaks of impaired sexual gratification to the male in the act of coition. Why a man of his great intellect and colossal experience should not have called attention to the fact that the same condition would have a worse effect upon the woman than upon the male, I do not know. Because of the lack of perineal support and loss of vulval constriction the male organ is not brought against the erectile labia minora and sensitive structures in the anterior angle of the vulva. By carefully inquiring of my patients from time to time, as opportunities have presented themselves for a number of years, I have been much gratified to have women of education and refinement tell me in a modest way that the sad old experience and great sorrow had passed away since a perfect perineum had been produced, according to the method spoken of by Dr. Haggard this morning—restoration of the vulval constriction and restoration of the perineum. I could cite perhaps twenty or thirty cases where I have positive information on this subject, in which women were continually left with the sexual impulse excited, but not relieved, unless by masturbation, and this has been completely overcome by restoring the perineum. I have some other experiences in connection with the same subject which are worth citing.

Some years ago a gentleman in Berkeley, Cal., bearing my name, cut out a section of the pudic nerve for clitoromania. He reported his case as cured, but also stated that prior to operation both ovaries were removed. The oöphorectomy had failed to effect a cure. Following his operation, I cut out a section of

the pudic nerve in a given case, and for a time I believe the patient was better, although she had gone on so far as to be a decided epileptic. After a period of three years I find that I have done no good whatever, and the patient is not well. My second operation was made upon a patient where the ovaries had been removed with no beneficial results at all. I had the pleasure only two weeks ago of seeing this young lady, who was brought from the South. She belongs to a family of wealth, education and refinement, and had become a monomaniac for some reason (perhaps, as I believe, from an inflammatory condition of the pudic nerve). Before coming under my observation her ovaries were removed by a physician in Buffalo, N. Y. Five years elapsed and no good had come from the operation. After taking out a section of the pudic nerve, I found to my satisfaction two weeks ago that she is now perfectly well and entirely restored mentally. Her health was good enough physically before. A careful examination of the parts showed that they were in an almost normal condition instead of being hyperemic and hyperesthetic, as they were at the time I operated. This was one of the most gratifying results I have ever had. Those two cases which have come under my observation, together with the case of my namesake, make it conclusive to me that the removal of the ovaries preceding the operation of taking out a section of the pudic nerve was essential to overcoming the condition.

One of the gentlemen who spoke here this afternoon referred to the cure of insanity by surgical procedures. I had in my experience the case of a young lady who was the head teacher of one of our city schools. She was confined in an insane asylum one year, and then removed from the asylum as incurable. Upon careful inquiry I found that an intense headache came on at the time of the menstrual period. This had gone on from bad to worse until insanity had resulted. In her case I found everything in the pelvis absolutely normal except one Fallopian tube, and that was kinked very sharply, and its lumen completely obstructed. The removal of this tube and ovary upon that side has completely restored her to health. Here was a case under the treatment of the best neurologists for a nervous condition prior to her becoming insane, and yet she was ultimately cured by a simple surgical procedure. I merely cite this case as an instructive one in connection with the point the gentleman mentions.

For a number of years I have been in the habit of inquiring about the vermiform appendix. I have in some of these cases opened the abdomen, searched for the cause of the nervous disturbance, and, finding only disease of the appendix, removed it, the nervous condition gradually passing away. As to whether it was the psychic effects of the operation, I am not prepared to say. I believe, however, that if we look up the literature of the subject we will find those who speak of epilepsy as a result of intestinal irritation. I recall one instance: In Quain's medical dictionary it is said that disturbance of the mucous membrane of the intestinal tract in children may result in the production of epilepsy and other convulsive diseases. If this little appendix is an incubator wherein all manner of germs may produce a catarrhal condition, and a point from which nervous disturbances are likely to emanate, surely it is to be considered in connection with reflex pelvic disturbance.

At the same time there is another condition which I have found to be worthy of attention in more cases than one, and it is a point which has been overlooked. I refer to coccygodynia. I believe it to be the imperative duty of every gynecologist, and neurologist for that matter, in making an examination, to pass the finger into the rectum and carefully examine the coccyx. It is well known that the coccyx may be bent forward by falls in childhood or be broken backward by the fetal head in childbirth. This point alone has been sufficient to enable me to find in many cases a condition from which patients could only be relieved by the removal of the coccyx. I recall one case in particular: she had her ovaries removed; she had been in a sanitorium under the best of care; was given massage, baths, etc., for a period of nearly one year; she was declared to be incurable by one of our best physicians. She recovered within four weeks from all nervous disorders after the removal of the coccyx. While I had taught anatomy for seven years I had forgotten the exact relation of the coccyx to the ganglion impar. Getting down Gray's Anatomy, he uses these simple words, "it is located on the coccyx." Then, we have, as it were, an electric button placed at the lowest point of the spinal column which may cast its current upward through the sympathetic into the great central ganglia within the brain or into other parts connected with the pelvic organs. In this connection I must express my belief that it is very rare indeed for any local condition to produce the so-called reflex nervous phenomena in an individual who is not neurasthenic and whose nerves have the proper affinity to attract from the passing blood stream, Lecithin, the material provided for nourishment of nerve cells. In nearly all cases of nervous reflexes there is a pre-existing tendency to neurasthenia, otherwise the reflex cause would only be a local condition producing its local phenomena, and would not produce the usual nervous phenomena so often accredited to local reflexes. I have not in my experience seen local conditions in the pelvis produce the general nervous disturbances so often spoken of. It is absolutely necessary, as I understand it, in many instances where we operate for pelvic disease and the nervous system is involved, to prepare the patient by treatment for neurasthenia and supplement the surgical procedure with appropriate treatment for the neurasthenic condition by the neurologist. Hence our gratification in meeting with the neurologists this afternoon.

There is a class of women who come to us complaining of nervous phenomena. They want to be everything but their present identity; everywhere except where they are now: in some one's company, present company always excepted. They have been to the neurologist, and they go to the gynecologist and undergo formidable operations with a heroism unparalleled in history; yet, after all there is some unhappy mental condition; they are living in some sort of mental torture; there is a skeleton in the closet. They have not loved wisely. They have not married the one they loved.

> Their hearts do break and show no sign—
> Save whitening lips and fading tresses;
> 'Til death pours out its cordial wine
> Slow pressed from misery's crushing presses.
>
> If singing breath and echoing chord
> To every silent pang were given;
> What endless melodies were poured,
> As sad as earth as sweet as Heaven!

If we could only get at all of these psychical condi-

tions we might lay down our scapels and leather bags; there might be some way of curing or relieving such individuals of their trouble and sorrow.

But of all the cursed and damnable causes of pelvic disease and neurasthenia, the horrible means to which women resort to prevent themselves from having children must be considered. My friend, Dr. Price, touched on this subject this morning, and it will not need much more touching up after he has handled it. The thousand and one methods of preventing conception, the mental torture that they continually undergo for fear they will conceive, are frightful to contemplate. By and by, they are, perchance just as wild and crazy to have children, when all of the delicate functions participating in conception and motherhood, have been so impaired, and the pelvic organs so destroyed or diseased, that conception is impossible. Then, too, there are the damnable methods of procuring abortion. I heard an explanation only recently why extra-uterine pregnancy was so common, and it was this; that the fetus even in its smallest form had become shy and hid away up in the Fallopian tubes to escape having its eyes punched out with crochet needles and septic probes of "quack" doctors. (Laughter.) There is in my judgment no one thing which is to-day contributing so largely to the deterioration of womankind and ultimately to mankind, as the damnable methods of the prevention of conception and the procuring of abortion.

NERVOUS AND MENTAL DISEASES FOLLOWING PELVIC OPERATIONS.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY HAROLD N. MOYER, M.D.
CHICAGO, ILL.

The topic assigned to me is a narrow one, namely, the nervous and mental diseases or changes which follow pelvic operations in women. The purpose of the inquiry is to show if there is any difference in the nervous and mental effects which follow operations upon the pelvic organs from operations done on other parts of the body or surgical operations in general. It would be easy to discuss this subject from one's individual experience, but it would be exceedingly narrow. The observations that come to any one man are certainly few as compared with those that come to a large number of operators, so that I shall not relate individual cases, but will draw conclusions so far as I can, from the literature which is accessible to me and the material which I have collected. The literature is disappointingly deficient in many respects. Reported cases of the nervous and mental changes which follow operations in general are very disappointing, especially when studied from a statistical standpoint. There have been a large number of studies made and cases collected of the nervous and mental phenomena which follow operations in general, but when we come to analyze this material we find that it is so varyingly expressed in different groups and in different tables, that an adequate comparison of a considerable number of cases is well-nigh impossible. If you think for a moment, you will see that the subject is one so complicated in its nature, that it scarcely lends itself to statistical treatment at all. If you remember, for instance, the widely varying opinions as to the efficacy of a particular treatment of typhoid fever, or indeed so recent a subject as the antitoxin treatment of diphtheria, a disease which is comparatively the same in all individuals, being of short and very nearly the same duration, it would seem as if the statistical method would throw abundant light upon the value of these treatments and would serve at once to settle the question as to their value. But as a matter of fact, it has not done so conclusively in all respects. When we come to consider the subject of operations and their effects you can see that the increased factors which we have to consider constitute such a varied problem that accurate, clear and concise conclusions can not be drawn. I can only bring to you today such general statements and such general conclusions as I myself have arrived at, without being able to give in figures the basis upon which they rest.

The first question which naturally presents itself is this: Is there any difference between operations upon the pelvic organs of women and operations in general? If you examine the statistics you will be at once struck with the number of cases which are operated upon for pelvic disease, which show insanity, neurasthenia and other nervous troubles following operation and probably resulting from it. Some writers have come to the conclusion that these operations are peculiarly liable to be followed by such phenomena; but if you come to analyze the cases more closely, you will find that operations are performed upon persons whose general health is greatly impaired. The great majority of them are very much reduced by a long history of illness prior to the operation. The operations in themselves are many times prolonged, and a by no means infrequent condition is the one of infection, a slow poisoning of the system for which the operation was undertaken. Those necessarily are apart from the operation itself, and they furnish a fruitful soil upon which nervous troubles and insanity are built. In order to get some sort of basis for comparison, I have taken fifty cases of operations upon the prostate and bladder. I have thought there might be some comparable relation between the pelvic organs in the male and in the female. The operation was on the same part of the body and frequently accompanied by ill health, and often in the male by infection. I compared fifty cases, excluding all those in which there was marked disease of the kidney, and I found that the nervous and mental effects following operations which might be attributed to the operation per se, were much greater in the male than in the female. Taking all factors into consideration, operations upon the female pelvic organs are not attended with more nervous disturbance, such as neurasthenia or insanity, than are operations in general surgery.

The character of the mental disturbance which may follow operations is substantially the same, whether the operations are done upon the pelvic organs or upon other parts of the body. The great bulk of them fall within the class of neurasthenia, or that condition which is described by alienists as primary confusional insanity. These two conditions seem to be the great predominating mental and nervous states which follow operations.

Again, I tried to study the question as to the particular character of the operation, and as to the part that was involved in the operation, and to find out if that had a bearing upon the question. I am unable to offer any conclusion on this point. Those

operations which include the ovary or Fallopian tube, and which are followed by the artificial or early menopause, were carefully studied, and I particularly addressed myself to the question as to whether there was any difference between the nervous phenomena of the artificial or induced menopause and the nervous disturbances which accompany the menopause at the ordinary time of life. My conclusion is that there is no essential difference and that they are practical, so far as nervous phenomena are concerned.

Another question is: Whether the removal of the ovary added an additional factor, in the sense that there was something taken out of the economy, if you please, by which there was created an unstable or peculiar nervous state; something that was comparable to the removal of the thyroid gland or an internal secretion cut off, and whether there might be mental phenomena growing out of the removal of the ovary distinct in their characteristics from the artificial menopause? I have no conclusions to offer upon that phase of the subject. I have not formed an opinion as to whether that is so or not, as the evidence is very conflicting. It may or may not be. Certainly, so far as the effects of operations are concerned and so far as my studies go, there seems to be a practical point in this, that the ovary had better be left in, or a part of it, if possible, and there is also sufficient to warrant the deduction that resection of the ovary is far preferable to removing it, if it is possible to do so.

In conclusion, therefore, I would simply say that I have arrived at the opinion that there are no radical differences in the primary effects of operations upon the pelvic organs in men differing from the effects of similar operations in women, or indeed of operations in general surgery, and that there is a distinct and peculiar effect from the removal of the ovaries or tubes, or both, by which the menopause is established, but that that does not differ in its nervous phenomena from the menopause occurring normally at the ordinary time of life. As to the possibility of a peculiar physiologic effect following extirpation of the ovary, not attributable to the menopause, I have absolutely no conclusion to offer.

DISCUSSION ON PAPERS BY DRS. EASTMAN AND MOYER.

Dr. MILO B. WARD, Kansas City, Mo.—I could never quite understand how it is that we have so many differences of opinion in our profession regarding a question of so much importance as the one before us today. One physician will come before you and say that surgical interference is never indicated in neurotic troubles, and that the results are never good. That is the implication at least. Another will tell you that of very many cases that have come under his observation the majority of them, when operated on judiciously, recover entirely. We take the history of one case, for instance, in our experience and make it cover the whole experience of our practice. For instance, if I operate on a patient who I know has a nervous affection and she does not recover, I am frightened out of doing an operation for like conditions on other patients. About three years ago, when I was called upon to discuss this question in the State Medical Society of Missouri, I said then that I did not believe surgical interference was ever indicated for neurotic troubles unless the pathology was very marked, and then we operate for the pathologic condition without any expectation whatever of deriving much benefit from the operation as to mental influences. I am here today to champion the opposite of that opinion. I have had cases enough in my own experience in which relief was so perfect following surgical interference for disease of the pelvic organs and marked nervous disturbance, that I think we have here a great field for investigation and work. We are bound to admit that there is no other influence in the human economy that has so much to do with the general system as the pelvic organs in the females.

About a year ago a young lady was brought to me under the impression that she had some pelvic trouble. Her father had been told by his physician that she had epilepsy; she was a great sufferer, and it was really a pity to look at her. I examined her carefully under ether, and found absolutely no pathology in the pelvis. I stated as my further belief that an operation for pelvic trouble was not indicated and that I would put her on the improved treatment for epilepsy and watch the symptoms. After two and a half months' treatment the young lady improved, but not satisfactorily so. I made an exploratory incision and finding that the appendages were diseased, removed them. The young lady went home at the end of five weeks perfectly well and has not had a symptom since then.

I have had two cases in the last six months where I have removed the uterus for disease. In one case the appendages were removed for neurotic troubles. These patients were great sufferers constantly for weeks and months, and both of them are well today, having had no symptoms since the operation. I have been informed recently, although I can not give the author of the statement, by a physician who heard the report that in Toronto an alienist reported that a hundred and nine cases in the asylum there were subjects of various pathologic conditions, and each one had had an operation performed, and of that number about seventy-five per cent. of them were sent home well. How are we going to account for that fact unless there is some relation between the pelvic organs and the general nervous system?

A few years ago I had the honor to be gynecologist for the Topeka Insane Asylum. There were two patients brought to me with the belief that something could be done for them by resorting to operative interference. One young woman had homicidal insanity; tried several times to kill herself, and was brought to the asylum as incurable. In her case I found marked pelvic disease with adhesions, and I said to the husband, "I will operate on her, although I do not believe it will do any good." I removed the diseased organs, and strange to say, that woman never had a symptom after the operation. It is three years since the operation was done and she has never had any symptoms since.

Dr. J. T. ESKRIDGE, Denver—I am sure we are very much impressed with the change that has taken place during the last fourteen years. I remember—I think it was in November or December of 1883—of participating in a discussion before the Philadelphia County Medical Society on this subject. There was a distinct antagonism between the position of the neurologist and that of the gynecologist. As you can recognize from the discussion this afternoon this feeling has largely passed away. We are coming to recognize that the mutual relations of certain specialties are so strong that we must work together, if we work for the good of our patients. I feel very closely associated with the general practitioner of medicine, with the gynecologist, the laryngologist, the ophthalmologist and with the specialist of acute and chronic diseases in both male and female. I feel that every man must know something of everything in medicine and everything, if possible, of some one special subject. We find patients coming to us who complain of various symptoms. If a patient comes to me complaining with an array of nervous symptoms which have existed for some time, and I find on inquiry that the symptoms point strongly to the pelvic organs, I do not submit that patient to the expense of an examination from a neurologic standpoint, but I send her to a gynecologist and let him find out whether there is any special trouble in the pelvis first. I realize the fact that I am to do my best, and if some organic lesion exists in the pelvis it is impossible to cure the patient until the organic lesion is relieved. The gynecologists and neurologists of Denver work together in this respect. If I begin to investigate a case of nervous disease, and find there are other symptoms which strongly point to some local trouble, be it in the chest, in the nose or the eye, I invariably send the patient to the proper specialist for investigation before I try to thoroughly examine her. A neurologist should be made the broadest of all specialists. He should investigate his cases most thoroughly, but only after certain conditions are excluded. I have tried to cure certain cases of nervous diseases that presented decided symptoms of pelvic trouble. I have succeeded in many of them, but have failed in others. Now, I never try to cure a case of nervous disease, such as neurasthenia, until I have excluded the possibility of local trouble in various portions of the body. Further, I believe that certain conditions, depressed states of the nervous system, may cause the development of symptoms in special organs of the body; that we may have a person simply in a neurasthenic condition extending over a period of years and she may after a while develop some pelvic trouble, and a gynecologist getting hold of the patient may think that she has suffered all the time from some intra-pelvic trouble, when, as a matter of fact, it is not so. The intra-pel-

vic trouble has been subsequently developed; her state of health has been depressed, other causes have acted locally and local trouble is developed.

In regard to how much intra-pelvic trouble has to do with the causation of nervous troubles, I think everyone who has had much experience will say that they have a great deal. We can have a typic train of nervous symptoms due to intra pelvic trouble, as has been developed over and over. We can bring forward numerous cases of insanity that we have seen cured by operative measures, but no cases of dementia existing over a period of years. Dementia is practically incurable, that is, it is never cured by intra-pelvic operations. But the insanities are cured. A number of cases of operations upon the body other than the pelvic organs have resulted in a cure of mental disturbances. I could cite a number of cases of insanity that have been cured in this city by prompt surgical measures. These were comparatively acute cases of insanity. But there is a happy medium, and that is just what we are all striving for, and the nearer specialists work together, the sooner we will reach the goal. We should investigate our cases from an unbiased standpoint; we should investigate them so that we can get an exchange of opinion, and I hope the time is coming when we will have other symposiums on different subjects, so that we can understand each other. It would be a good thing if we could meet together in one room, but we can have symposiums from year to year and learn the views of others, although our work runs separately.

Dr. JOSEPH PRICE, Philadelphia—During the last year or two neurologists have paid quite as much attention to gynecology theoretically as we have, but not quite so much, I regret, practically. If they had paid as much attention to the diagnosis of the pelvic viscera as they have to the theory of neurasthenia, they would not have appeared in print as often the last year or so, and some of the gentlemen have figured in this discussion.

Intra-pelvic disease in private practice and in our public asylums is largely responsible for many of the nervous disturbances found. I recall a case that came under my observation some years ago, in which a woman was said to be suffering from vesical or rectal disturbance, and I was asked if I would not see her. I saw her the following day, relieved a simple fissure by divulsion, and returned the woman, who was lodged in an asylum, to her home. She is now an active woman, and has borne a large family. Dr. Potter of Germantown once referred a patient to me who was wearing a spinal brace, and I think a jury mast. She had been married some years ago and had never conceived. She was greatly emaciated; she had all sorts of emotional disturbances aside from her physical incapacity. On examination I found the uterus and appendages fixed, and where we have a fixed uterus and appendages we have occlusion with retention of fluid, pus or water—always. I removed the diseased appendages, freed the uterus, and she made a good recovery. She has not worn the jury mast or spinal brace since. Another case: A woman from Pottsville, the wife of a prominent business man, was confined in an asylum. Her husband was urged to consult me, and I advised him to bring her home. This he did. On examination I found the appendages diseased, with occlusion and retention again. I removed the diseased appendages, and the woman has made a beautiful recovery.

An active practitioner in West Philadelphia brought a patient to my office some two years ago. She was a young woman, 20 years of age, and she had been treated by three prominent neurologists of Philadelphia. He went on to tell me that her mania and nervous disturbances were of such a marked nature that it was necessary to confine her or put her in a jacket. The nervous disturbance was always aggravated at the menstrual period. He asked me if I would attempt to do something for her relief. She was the daughter of intelligent people in good circumstances. The young woman was admitted to my hospital in a strait-jacket. This was removed and she was controlled by two good nurses. In that case I found simply prolapse with fixation, a subject you have discussed most carefully. There was also great tenderness. The local conditions had been treated by general treatment, but unfortunately not by local methods. I removed the appendages and she recovered beautifully. She went to the country and her convalescence was prolonged by quiet and rest. I do not think she has ever had a convulsion since, and she is now a devoted daughter, and goes out into society.

Some years ago I did a few operations in my native State, and while visiting an institution at Petersburg, Va., I had a curiosity to know how many colored women in that asylum were burdened with fibroids. I do not believe that most women who have fibroids are entirely themselves. There is always more or less marked disturbance. I went over the asylum and examined the colored women rapidly for one hour with fibroids and tubal and ovarian disease. In some cases it would really have been difficult to have passed a catheter between the fibroid, compressing the pubic arch, and the urethra. It was the saddest experience I have ever had in gynecology.

Regarding nervous phenomena following operations, I am perfectly willing to admit that we have had too many post-operative sequelæ and too many local lesions following our operations; but many of the operations early in the history of gynecology were imperfect and incomplete. The materials were badly chosen, and are yet in many cases. Very few gynecologists and very few surgeons are serving the apprenticeship they should serve. For instance, I am constantly removing dead ligatures, and all of you who are doing much of this work are doing the same thing. Three days before I left home I did three consecutive sections. One woman had had two sections performed on her. While operations are done with badly prepared materials we will have all sorts of nervous disturbances and local pain until they are removed.

The specialists in other departments have been very fair. I have specialists who constantly send patients to me. Nose, throat and ear men send patients to me and ask if there is anything the matter with the pelvic organs of their patients. I examine them carefully and write them if I find the slightest lesion whatever. If there is but slight tenderness and absence of adhesions of any character on the right or left side, I tell them a little general treatment judiciously directed by themselves will be sufficient, and that operative interference is out of the question. They follow my instructions, and the patients are willing to be guided by their counsel and treatment, and are benefited. Early in the history of this subject we were probably all guilty of doing operations we should not have done, but we do not feel so badly about it because the cases were very few, and it is easier in a progressive profession simply to practice levelling.

Dr. HENRY O. MARCY, Boston—Your presence during three long hours upon a discussion of this subject is sufficient evidence of the intense interest and value of it. But I am reminded that this discussion should have closed with what Dr. Price has told you. However, there is something else to be said. It is not a very great while ago that a story was told me of the late distinguished Benjamin Butler. His assistant interrupted him in the midst of one of his debates to give him a point, and he turned to him and said, "When I have got through, you can rake behind." When Dr. Price gets through there is very little raking to do. It is said that a student in New York from the Allegheny Mountains, after hearing a discussion upon this subject by one of his professors, turned to one of his friends and said in his vernacular, "I'll be gol darned, I'd rather be a moonshiner in the mountains of Tennessee than to be a uterus in the city of New York." This subject is by no means so new as some would have us believe. I am reminded of a celebrated discussion that occurred between two most notable men sixty years ago in London: Sir Benjamin Brodie and the great Watson, who wrote the practice of medicine in two volumes which we were asked to digest in our earlier days. After they had gone over the case carefully, Sir Benjamin asked this great physician his opinion, and he said: "Sir Benjamin, it seems to me, Sir, that it is equally good practice in medicine, as it is good practice in surgery, that if you find the offending organ, to deal with it in accordance with its real merit." That may settle altogether the question you have had so long under discussion today. When you have found the offending factor it is your duty to consider it in the light of the better knowledge which it is our profession to possess. This may settle the question in broad terms. You all know that the experiences that have been related today are not alone, but that they can be multiplied in the experience of every individual present. I am glad to tell my friend, Dr. Ward, that it was none other than the distinguished Dr. R. M. Bucke of London, Ontario (superintendent of the Insane Asylum), who, as my guest less than three years ago, said he would go back to Ontario and ascertain by careful examinations made by good gynecologists how much a factor pelvic diseases pertained to the patients there incarcerated. And last summer at the Montreal meeting of the British Medical Association he made the report to which Dr. Ward referred, and he told me afterward personally that in more than 80 per cent. of the cases there were complete cures, the patients' mental equilibrium being restored. I believe that Dr. Price is right regarding our asylums. In Massachusetts I have asked several times that the inmates in our institutions for the insane be examined by a competent man, and I have had the requests denied. It is a question that has a practical bearing. I am sure there are many cases in which, after pelvic opera-

tions, mental troubles have been relieved. Plenty of cases can be reported. Here is one, for instance. A woman had been married seven years and for this period was practically an invalid in bed. She was brought to me 500 miles, and after the removal of the offending pelvic organ she was completely restored; she took her position in society and made her home happy. Four years later she came to see me and said that she was not feeling quite well, and this time the appendix was the offender, which had been carried down by some forcible act into the pelvic structures and was adherent behind the uterus. The appendix was removed and again she was restored to health.

Not long since a patient in my private hospital was brought to me in a strait jacket; she had worn a suspensory apparatus so long a time that it had deformed the body. She had been in one of our general hospitals for several weeks, had been examined by neurologists, and they had declared nothing could be done. After a careful examination I found adherent adnexa, disease of the ovaries, removed them, and four weeks afterward the woman was walking without her jacket, and only a day or two before I left home I was informed that she was progressing rapidly. This is not an isolated case; each member of the Section can multiply them in great number. Take the diseases that come from pus tube and many affections of that character, and ask yourselves as to the results following surgical interference. But in closing this already too long discussion, for I see many of you are tired, I would like to say this, that in all of the discussions in which I have participated I have rarely seen such equipoise of good judgment and of discrimination as has been shown in the debate to which we have listened this afternoon.

Dr. CHARLES H. HUGHES of St. Louis, Mo.—I believe I had the honor by invitation of Dr. Marcy of reading the first neurologic paper in this country before a gynecologic body. I selected, at the suggestion of Dr. Marcy himself, the theme, "The Neurological Aspect of Gynecic Disease." We all sail in the same boat. We work in the same field, and we are obliged to work together; we can not make any progress without it. Neurology depends upon gynecology largely in the affections of women, and it is apparent to leaders in gynecologic thought that the nervous system is no longer ignored, and has not been for decades in the history of gynecologic practice by the most eminent, practical and best gynecologists of our day. There is no quarrel between the average intelligent gynecologist and neurologist today, and if I had made the opening speech I should have congratulated both departments upon the wonderful growing together of neurology and gynecology, and the notable advances which both specialties have been making in the last three decades. Neurology is a young specialty. Gynecology antedates neurology a long way. You have a longer time in which to look over past records. You have committed some errors; ours are yet to be made. The question we are both endeavoring to determine with scientific accuracy is when and where and how to interfere gynecologically, and when and where and how to proceed neurologically in a given case involving woman. Our observations teach us that it is absolutely impossible for either of us to get along without the other and be successful practitioners of medicine. We have learned, gynecology has learned, and now gynecology teaches that a neuropathic diathesis is not to be obliterated by an operation, and neurology acquiesces in the dictum of gynecologic thought. It is not the intelligent, up to date gynecologists that neurologists quarrel with; but it is the intermeddler who knows neither gynecology nor neurology. Neurology does not exempt a woman's pelvis from those necessary operative procedures which are so essential in the presence of disease. An unstable nervous organism may be rendered stable by a judicious and timely pelvic operation. The gynecologist does not cure the underlying, the neuropathic, hereditary instability of the organization. It is only men of limited knowledge in gynecology or neurology that make this assertion. The atmosphere is becoming clarified, and we are seeing more clearly than ever before, and we are working together.

Dr. Price referred to a case of insanity being cured by treating a fistula. When I was 22 years of age, in a military hospital, I recollect relieving a fistula and curing a case of melancholia in three weeks. The neurophatic instability was there; the determining factor that produced the latent melancholia was removed and the man was restored to his normal condition. That is the value of the neurologic idea of gynecic operations. We do not step upon rational gynecologic procedures. We ought not in a discussion like this to attempt to make each other out culprits and disparage the efforts of the other in this work, because we as neurologists can not get along without gynecology. We do not want it, and you can not get along without us, without borrowing information from neurology; nor can we without borrowing information from gynecology; nor do we want to.

My object in participating in this discussion is to put neurology in its proper aspect before gynecology. It is the needless, meddlesome gynecology that we object to; it is the psychical effects produced at certain times by gynecologic procedures that are not necessary, but whenever an operation is inevitably necessary no neurologist, properly informed, dare object.

Dr. S. C. GORDON, Portland, Me.—I had the honor to be Chairman of this Section at the meeting in St. Louis in 1886. The title of my paper at that time was "Hysteria and its Relation to Diseases of the Pelvic Organs," and was based upon operations that I had made from 1883 to 1886 in just this class of cases. I showed from the cases detailed there abundant proof to my mind that removal of the ovaries had produced relief of the nervous symptoms, or of hysteric symptoms. Before that time neurasthenia had hardly come into use. We had hardly discriminated between hysteria and neurasthenia. Now, some of the cases operated on and reported at that time have been neurasthenia. I am not sure they were not. I am sure, the neurologists of today would not have called it neurasthenia, and neurologists all admit, that neurasthenia may have a pelvic origin, and it may be relieved by operations upon the pelvis. I do not mean to say, that I did operations at that time that were needless.

I was called at that time, "a radical." Dr. Joseph Price has been called a radical. It never disturbed me very much, because I know I did a great deal of good in this radical direction. Since then I have learned a good many things; I have learned to do conservative operations upon the ovaries and tubes, and such operations have been beneficial, as has total extirpation of these adnexa. But I am still a radical, and in every case where I feel obliged to remove the adnexæ, I remove the uterus and all. I get rid of the whole business. If that is radicalism, I make the most of it. I do not remove the tubes and ovaries for conditions that I once did. But the point made by Dr. Humiston of Cleveland is a strong one, and that was made prominent by Dr. Palmer of Cincinnati in a paper read before the American Gynecologic Society three years ago, namely, a sclerosed condition of the tunic of the ovary. You cut the ovaries with a knife and you can cut the finger with the edge of the incision in the ovary. Those are cases that no neurologist in the world can benefit, and when they have nervous symptoms connected with this condition I remove the ovaries, but I do so only after a careful examination and the conviction that such is the physical condition of these ovaries. Therefore, I believe we are doing a great work in this matter. We have done a great deal in this direction, and we all learn from our mistakes. We believe we have benefited hundreds of women by radical operations.

Dr. C. E. RIGGS, St. Paul—I think this symposium has proved of the greatest benefit. We have learned some valuable facts, namely, that we are very much closer together than we really knew of. If a woman has local trouble she expects to be neurasthenic or hysteric, and possibly insane, that is, in extreme degree. I never will forget a case I saw in the Salpetriere a little over a year ago, shown by Charcot the younger. It was a woman who had a great desire to be an angel. So intense was the desire for it that she went into the chapel where the beautiful pictures were with hands clasped, rising on the feet ready to soar and pierce the heavens. She did rise on her feet. She had an hysteric contraction of the gastrocnemius muscles, and the only one thing she lacked was wings.

This feeling, that there is something particularly serious about pelvic conditions is destined along the line of suggestion to do a vast amount of harm. I remember Charcot saying, never, never remove the ovaries for hysteria. I do not think he meant to exclude the removal of pathologic ovaries, and I am sure, no neurologist, who has looked at the subject broadly, would take any other view than that if the ovaries were the source of reflex irritation they should be removed. I have in mind at the present time a woman who was said to be having serious trouble during the adolescent period, and finally, not knowing whether the ovaries were exactly healthy or not, they were removed, and for seventeen years that woman has been an invalid. The ovaries should have been allowed to remain. I think resection of the ovary in some cases would prevent many serious consequences along the line of nervous troubles that usually follow. As to mental troubles, it is absurd to suppose that pelvic disease can cause dementia. Terminal dementia, as has been said by my *confrère*, Dr. Eskridge, is absolutely incurable. There is no doubt but what local troubles can cause a neuropathic condition; but when we have degenerated cells, we have hyaline and fibroid degenerations in the blood-vessels, we have increased neuroglia, we have thickened membranes, we have all of these things closing the drama of the life of an individual which no operation can remove.

A CONSIDERATION OF SOME OF THE REMOTE SYMPTOMS AND COMPLICATIONS OF A PELVIC DISEASE.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. D. NILES, M.D.
SALT LAKE CITY.

The existence of an intimate relationship between diseases of the female generative organs and morbid conditions and functional disorders in other parts of the body was known and appreciated in the earliest days of gynecology. The older gynecologists, guided as they were by clinical observations alone, and misled by a false pathology, based upon speculations and guesses, regarded these conditions and disorders as expressions of a mysterious, sympathetic or nervous influence that these organs, when diseased, exercised over remote parts of the body. For many years such obscure, vague and indefinite explanations satisfied the arm-chair theorist and furnished guidance and consolation to the office gynecologist and his patients. So long as our knowledge of pelvic disease was limited to conjectures suggested by the position of the uterus, the character of the vaginal discharge, the appearance of the os, etc., and our treatments were confined to applications, poultices, injections and sedatives, these unsatisfactory and untrue explanations can not be said to have been absolutely harmful. But with our present conception of the pathology and surgical treatment of pelvic diseases, it is both possible and necessary to obtain a clearer understanding of these remote symptoms and complications; and the serious consequences of overlooking and misinterpreting them are emphasized today by many a sufferer from an unnecessary, ill advised, poorly planned or neglected operation. The complaints of these sufferers not only remind us of actual errors or oversights which we should strive to avoid, but often serve unfairly as texts for remonstrances against surgical treatment in general.

Tempted and sometimes misled by the allurements of the more brilliant life-saving procedures, I believe we are prone to forget that the ultimate fate of our patients, our own reputations and the further advancement of surgery depend today more upon our correctly interpreting these symptoms and our prevention and proper management of these complications, than the devising of any newer and quicker methods of removing a pathologic specimen or of evacuating a pelvic abscess. The patient may soon forget the length of time in bed and lose interest in the size or location of an operation scar, but neither she nor her physician can banish from their minds the misery and suffering resulting from an imperfect diagnosis or an incomplete operation.

In examining a patient suffering from a possible pelvic disease, I have found it convenient and helpful to recall that the remote effects of pelvic disease may be due to the following causes:

1. *Septic infection*, ranging in virulence from puerperal septicemia, attended by chills, high fever; sweats, etc., to the mildest sepsis which may be shown by a slight headache, feeling of malaise, bad color, loss of strength, etc.

2. *Pressure upon nerves, vessels, ureters, bowels or bladder* causing neuralgias, local congestions, hemorrhoids, vesical irritation, painful defecation, constipation, partial or complete suppression or retention of the urine with resulting general symptoms.

3. *Bladder, bowel or omental adhesions*, the latter producing a chain of symptoms, due to the weight and dragging upon the stomach and colon of an adherent omentum. I believe that in women a large number of the cases described as gastro-enteroptosis may really be suffering from this cause or from colons heavy with fecal accumulations.

4. *Nervous reflexes.*—Under this head are included all those symptoms which with our present light can not be satisfactorily explained on any other hypothesis.

The wide range of symptoms capable of being produced by these four sets of causes may be advantageously considered in groups as follows:

1. All those that are due to deterioration of the blood, either by septic absorption or defect in the eliminative organs.

2. Those that are due to pressure upon the nerves or blood vessels of the pelvis. Among the pressure symptoms are also included all those non-inflammatory and non-malignant hypertrophic or atrophic changes in the ovary or endometrium which by pressure or irritation of the nerves or glandular elements cause distress or functional derangement.

3. Those that are due to functional disturbances or organic disease of the stomach and intestine from omental or bowel adhesions. In this group would be included such cardiac and nervous symptoms and evidences of malnutrition as may result from gastro-enteric disease.

Given a pelvic lesion, I believe that a reasonable explanation of most of the remote symptoms will be suggested under some of the above headings; or given the symptoms indicated in the foregoing classification inexplicable otherwise, I believe that we should search the pelvis for a possible cause, even in the absence of local signs or symptoms.

The two sets of symptoms which in my experience and observation we are most prone to overlook, underestimate or misinterpret are: 1, those symptoms of a mild systemic infection from low-grade chronic inflammation, and 2, those distressing derangements or grave diseases of the stomach and intestines, that bowel or omental adhesions are capable of producing.

Arthritis, tonsillitis, headaches, neuralgias, general mental and physical depression, evidences of malnutrition and all the well-known symptoms of a mild toxemia, with or without fever, may be due to absorption from a chronic salpingitis or an endometritis that may produce but little pelvic distress. All pelvic surgeons have observed the emaciation in chronic pus cases long after the acute symptoms have subsided. Dr. Price was the first to call my attention to this wasting, particularly in the legs of such patients, and he regarded it as a symptom of some significance. My own observations lead me to conclude that as a rule the nervous system is first to feel the effects of this deterioration of the blood, then the muscular system, but any of the structures of the body may suffer to an extent that might easily divert our thoughts from the real source of the trouble. I think that when these indications of blood deterioration occur and no defect in the excretory or assimilative functions can be discovered, we may assume that they are due to toxic absorption, and in women between the age of puberty and the climacteric, the most probable source will be found in the pelvic

organs, just as in a man a posterior urethritis or a chronic appendicitis is the usual origin.

The stomach and intestines seem to readily adjust themselves to the changes in position and crowding produced by large tumors or pregnancy, but any interference with the functions of their muscular coat, impairing, preventing or reversing normal peristalsis, whether by direct pressure of tumors, the dragging, constricting or occluding of bands of adhesion or the action of toxic irritants, may be followed by the most serious results. Normal peristalsis depends upon perfect and regular contractions of the circular and longitudinal fibers of the muscular coats of the intestines, and as no chain is stronger than its weakest link, any band of adhesion that serves to impair the functional activity of any part, however small, of this muscular coat, must interfere with normal peristalsis. Taking this view and taking into account the frequency of these lesions, I am convinced that peritoneal adhesions rank second only to sepsis in the production of distressing and dangerous symptoms. All pelvic and abdominal surgeons who have studied carefully the many recent excellent articles upon gastroptosis, gastro-enteroptosis, dynamic and adynamic ileus, etc., must be impressed that these conditions are due, not directly to downward displacement of the abdominal viscera but to interference with the normal functional activity of the muscles employed in peristalsis and that this interference is usually due to the dragging, constricting or occluding effects of adhesions, or in rare instances to the presence of microbic or other irritants (as lead). This view is further corroborated by the well-known fact that the omentum is always quick to attach itself to any pelvic inflammation and the contraction and the impaired mobility that ensues is likely to be followed by dragging upon the colon and stomach and attended by characteristic gastric symptoms. A colon heavily loaded with fecal matter may produce the same dragging with similar symptoms. The vomiting accompanying hernia of the omentum is susceptible of the same explanation. In a large proportion of the autopsies performed upon child-bearing women, a sagging colon will be found that has produced no suggestive symptoms during life, unless chronic constipation, peritoneal adhesions or exposure to lead poisoning previously existed. I believe, therefore, that we are not justified, as a rule, in regarding this displacement, taken by itself, as a pathologic entity. The following case illustrates well the point I have attempted to emphasize and will doubtless recall other cases where the remote symptoms and complications overshadowed and obscured the original pelvic lesion.

Mrs. C., Idaho, aged 37, housewife. First seen Feb. 20, 1897. The patient, an extremely pale, anemic, emaciated woman, gave a history of having been ill for two years. During the most of this time she had been under active treatment for a grave stomach disease which was regarded by her last medical attendants as either gastric ulcer or cancer. She certainly gave a very suggestive history, viz., severe pain over the pit of the stomach, radiating to the back and shoulders, worse after eating; vomiting daily, food, coffee-ground material, and at times considerable blood. She had lost fifty pounds in weight and for the past six months had been bedridden most of the time. Her diet had been soft predigested foods taken in small quantities. When the paroxysms of pain occurred the only relief she obtained was by the use of morphin and the stomach tube which had been her constant companion. There was no tumor nor marked tenderness, but the stomach was displaced downward until when distended it extended below the umbilical line. It seemed to me that in spite of this history, the length of time should exclude cancer and that we had not the typic symptoms of gastric ulcer. Vaginal examination disclosed a retroverted uterus, the fundus pressed to the right by a small immovable tumor.

On February 25 I opened the abdomen and removed a dermoid cyst, the size of a small orange, containing bone, cartilage, hair and sebaceous material. The adhesions were extensive and strong, attaching the lower order of the ometum firmly to the tumor and thus dragging upon the stomach. These adhesions were thoroughly broken up and the abdomen closed without flushing or drainage. The patient made a smooth recovery and left the hospital quite well four weeks later. I have heard from her at intervals ever since and always favorably. She eats anything and everything with impunity, has no distress or occasion to take a dose of medicine. She has regained her former weight and strength and in every way appears perfectly well.

Septic infection, peritoneal adhesions and the presence of tumors or growths are the chief indications for pelvic surgery.

The relative importance and responsibility of each of these pathologic factors as a producer of distressing or dangerous conditions indicate to the pelvic surgeon the relative claim of each to surgical attention. Those of us who are convinced that no one of these factors should be neglected in any operation under any pretext, can not consistently endorse those surgical procedures, which include alone, the removal of pus or the pathologic specimen perhaps, but does not embrace the breaking up of all adhesions. We believe that the present growing tendency to do such incomplete work will be found unsatisfactory in time, as further study and experience reveal the evil consequences, remote and immediate, of such operations and render apparent the true origin of these consequences. Those who have a working as well as theoretic faith in complete work can not, to my mind, look with favor upon any vaginal operation for the relief of pelvic inflammation, the delayed operation for appendicitis, or the leaving of an abscess wall or gangrenous appendix, or bands of adhesions after opening an appendiceal abscess, nor upon the so-called conservative work upon the appendages. Neither can they regard any peritonitis infected by an inflamed tube or appendix as ever cured except by operative measures. Illogic and misleading references to so-called clinical recoveries, the exaggerated advantages of a quick and easy operation, short time in bed, lessened shock and hidden scar will not, if they are true to their faith, tempt them to subject their patients to the dangers of an incomplete operation.

In saying this I do not forget that among those who teach and practice these incomplete appendiceal and vaginal operations, and this so-called conservative abdominal surgery are operators whose skill, reputation and sincerity can not be questioned; and their honest belief that these methods give the maximum amount of relief, with the minimum amount of risk, is not to be shaken by ridicule, abuse, statistics or persuasive arguments. But I trust and believe that their conversion to the complete operation will come as the importance of peritoneal adhesions as a pathologic factor is made apparent to them in their practice.

The actual increased immediate risk of the complete operation, we can already approximately determine, but the real point of contention, and that most difficult to make apparent and agree upon, is our estimate of the serious remote consequences of peritoneal adhesions, partially devitalized tissue remaining in the peritoneal cavity, pressure, symptoms, etc. As further study, experience and observation shall reveal just how much and how little these factors have to do

with our ultimate results, we will progress toward precision in diagnosis and in treatment. In the meantime neither the diagnostician nor the operator can afford to be diverted by the urgency, prominence or immediate danger of other symptoms from a fair consideration of those less acute, more remote but not less grave, symptoms, complications, and sequelæ which usually exist and often menace the health, well-being and even threaten the life of patients suffering from pelvic disease.

PELVIC INFLAMMATORY DISEASES.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

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This subject would seem to be worn threadbare, judging from its being so often used as a theme for discussion, yet the fabric, being of great surgical value, has rather improved by use and age. The discussion of any topic in which the questions of human life and comfort are concerned is always timely and of interest.

Sentiment and fashion should never be permitted to enter into a proposition where the question is one in which these unsurgical twins have long since proved themselves montrosities.

Abdominal scars have been used as breastworks behind which some surgeons have hidden their fears of removing complications and the performance of complete work, while they made and abandoned tunnels in which the enemy threw up additional fortifications to repulse the invader who attempts to reduce their stronghold to liberate imprisoned organs and dislodge the offending cause.

It is perfect surgery, or as near perfect surgery as possible, that all surgeons should desire, but before accepting precepts involving human life and comfort, all evidence should be brought to bear on the topic, duly analyzed and weighed for its proper worth. Occasionally a surgeon who has been obtaining almost uniform good results will give up the old for something new and uncertain.

The limit and the character of the pathology should form an indication as to the character and the extent of the surgical procedure. A succulent and pus-infiltrated uterus, with possibly numerous pus foci, surrounded with pus-laden tubes and ovaries, should be removed, the choice of operative procedure being the one that, in the opinion of the surgeon, offers the greatest chances of immediate recovery from the operation, a permanent relief of the constitutional (septic) manifestations, the local symptoms resulting from the presence of these diseased structures, and the repairing of the damage to surrounding organs wrought by their presence.

A cancerous uterus should always be removed, if seen before the disease has extended to surrounding organs. The tubes and ovaries, as a rule, should be taken along with it, thus keeping as far beyond the diseased area as possible.

A uterus known to be tuberculous should be removed along with the appendages, as by so doing a systemic infection may be averted. The cancerous and tuberculous uterus, as a rule, can be removed through the vagina, for, if the disease has advanced so far as to involve the viscera, the case is an inoperable one, and should be left alone so far as surgery is concerned. The operation that promises nothing more than a specimen and a fee is not within the domain of legitimate surgery.

In an old, recurring, puriform disease of the uterine adnexa, where adhesions are well organized and where the intestinal bladder and the omental attachments are firm, the vaginal method would be fraught with more danger than the abdominal. These cases have established in part a peritonitic immunity by a prolonged and gradual process of auto-serotherapy; consequently the abdominal method is not so liable to inaugurate an acute, dangerous peritonitis or septicemia, as is often the case in the acute or primary attacks, if operated on.

Some of the advocates of the vaginal method, only a short time ago, maintained that it was an admission of incomplete operation to use drainage, yet they advance the good drainage by the vagina as an argument in favor of the vaginal route.

It has long been an established and demonstrable fact, that in the majority of instances, the uterus is capable of taking care of itself, and that it does not give rise to any trouble by its presence after the diseased appendages have been removed. I do not understand why an organ with a good and free natural drainage should not recover, and yet, as is claimed, an ovarian abscess or parts of diseased tubes, with walls as thick and as shaggy as a cocoanut, get well with an opening into the vagina.

To remove the uterus and a part only (as is admitted in many cases) of a diseased tube and ovary, and leave a filthy sequestrum in the pelvis, and expect Nature to cure the case, is not good surgery, and a larger percentage will be found to have imperfect recoveries, fistulæ, and continuance of the pain, than if the work had been completed. This it is possible to do, and it is done by good surgery when operating suprapubically.

The Trendelenburg position and vision surgery took possession of the minds and technique of many operators a few years ago, and numerous articles were written lauding the advantages of that position while doing abdominal and pelvic surgery. The pathology is really confined to the pelvis, but its effect and extension are often found at the umbilical level. Some of the operators (and many of them are skilled and successful in every surgical sense) are now practicing and teaching the dark-route (vaginal) method, where strong instruments, the sense of touch, much muscle, and adhesive or staying qualities are factors in the make-up of the surgeon and his surgical outfit, and essential to getting the specimen or part of it.

The vaginal-route operation is not an easy one, neither is it as quickly performed as the suprapubic.

Pus is not always found in the tubes and ovaries where their removal is demanded. Firm and well-organized adhesions are often found binding the omentum, bladder, uterus, tubes and ovaries firmly together. These adhesions were at one time Nature's breastworks thrown out for the protection of surrounding organs, but, like Nature's works in many other localities, she here fails to undo her imperfect work. The vascularity or limit of these adhesions is only determined at the time of the operation. An omental adhesion to the fundus may be torn across in the beginning of an operation, and scarcely a drop of blood escape, while in another, hemorrhage may quickly prove fatal. A bleeding of this character is

best controlled by a good ligature, such as it is only possible to apply in all cases correctly by the suprapubic method.

A prolapsed uterus, surrounded by inflammatory diseased tubes and ovaries, can best be treated by a vaginal hysterectomy, removing appendages at the same time. In this condition the uterus is not removed because of a fear that its infected state would preclude the possibility of a relief of the symptoms induced by the procidentia. Some of these cases are cured by the removal of the appendages, a ventral fixation of the uterus, and a repair of the vaginal tears.

Occasionally a gynecologist is called to see a case in the first attack, and finds the general state of the patient such that to attempt the major or curative operation would be fraught with a danger of such magnitude that it would be bad surgery to do otherwise than simply to make an incision into the mass in the vaginal vault and drain, with the idea of completing the operation at some future time. All are agreed upon the course to pursue in such a case.

If the case should prove to be a true pelvic abscess, one of those extremely rare cases in which the pus is extraperitoneal, or in other words, between the layers of the broad ligament, this seemingly minor procedure will be found, in the majority of instances, all that is necessary to effect a cure. These cases are rarely met with in practice, and not so often in the literature of today as in that of former years. To remove the uterus in such a case would be a sacrifice unwarrantable, as there is nothing to be removed but the pus.

A failure to discriminate between this rare disease and the more common tubal disease, until in the midst of a vaginal hysterectomy, is extremely unfortunate, as it is then too late to retrace, while, if the incision was made suprapubically, the error would not be so expensive, and the correct course to pursue would be pointed out.

It may be claimed that through a posterior vaginal opening the appendages can be examined, and the same deduction arrived at as though the abdomen was opened; but the fact must not be lost sight of that in these cases (true pelvic abscess) the pelvic peritoneum is clean and uninfected, and that a posterior opening endangers the safety of this structure. A safe rule to apply here would be to cut into the bulging part where the pus is nearest to the mucous membrane.

In the midst of a prolonged and difficult operation for the removal of the uterus and pus-bearing tubes an alarming hemorrhage sets in, the exact source of which cannot be found. The patient's abdomen is opened in the quickest possible time, with an imperfect asepsis, and the bleeding controlled; but three days later the patient dies from a peritonitis.

The operator can not take the necessary time and precaution in preparing his instruments, his patient, and himself, to do a clean abdominal operation, when the question of most importance is to quickly save his patient from hemorrhage. The above remarks applicable to bleeding are of equal force in most instances where an intestine has been opened through the vagina. Very few operators, I am sure, would feel competent or able to put in a row of Lembert sutures, and make a closure of an intestinal rent that could be trusted to keep in liquid and gases.

The mesentery, in cases where many adhesions are present, will be found thickened and shortened at the time of operation to such an extent that it would be impossible to pull a coil of bowel down into the vaginal opening, already filled with a dozen, more or less, pressure forceps.

In comparing the relative ease with which manipulation can be carried on through an abdominal incision and an opening in the vaginal vault, it must be remembered that the bony resistance met with by the impinging of the hand against the pubes is unyielding, differing very much from the pliant muscle of the abdomen under anesthesia.

A small percentage of post-operative herniæ is found in following a large series of abdominal incisions, but these are discovered by the patient and not by the surgeon, and are not of such frequent occurrence as to be used as an argument against the suprapubic incision. Time and close investigation of the vaginal cases will reveal an equal or a larger number of vaginal bowel protrusions.

The length of the mesentery precludes, in most instances, the possibility of the intestine reaching the outer entrance to the vagina, and many vaginal intestinal herniæ will not be discovered by the surgeon owing to the return of the bowel when the patient is in the usual position for vaginal examinations. In examining for a vaginal hernia, the examination should be made with the patient standing.

It is not sound argument to advance that the woman with a vaginal operation can get up and be about in ten days, as it is not probable that the vault has healed so much more quickly than a smaller, clean, incised wound in the abdominal walls.

One writer says: "The abdominal scar is a source of great worriment, especially to the French women, who are great admirers of a fair complexion and unblemished skin." A suprapubic scar and a low-necked dress may be incompatible in Paris. Even some who held other views are made converts to this idea after visiting the French metropolis.

Very few cases in abdominal surgery die from shock if the work of the operator is decisive and quick. "Chronic surgery" and prolonged anesthesia kill many patients, regardless of the character or location of the pathology or route of surgical approach. Septic patients endure anesthetics and slow surgery badly.

One writer, and, by the way, a good operator, in praising the vaginal system, says: "Landau has done good work, but in a great many cases he *opens the abdomen to finish*." (Italics mine.) Landau is regarded as an expert surgeon, yet in a large number of cases he is compelled, in the midst of an already prolonged vaginal operation, to open the abdomen to finish his work, thus making two incisions instead of opening the pelvic and abdominal cavities. This work can always be completed by the suprapubic route.

Not a week ago, in breaking up universal adhesions, the appendix (which was diseased) pulled off at its cecal end, leaving a ragged opening in the cecum. The discovery and closure of the bowel injury saved my patient. Others have had similar experiences.

A Florid Adage for a Dissecting-room.—The legend of the old Ohio Medical College dissecting-room was as follows: "Hic locus est ubi Mors gaudet succurrere vitæ"—this is the place where Death rejoices to aid life.

SIGMOID SURGERY FROM THE INTRA-ABDOMINAL AND INTRAPELVIC STANDPOINT.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. G. CARPENTER, M.D.
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Diseases of the sigmoid have remained in practical obscurity, and the sigmoid per se, so far as the rectal specialist and general surgeon are concerned, have been a terra incognita. November, 1885, the sigmoid cavity was first exposed with the light of research, and scientific truths observed in the living subject narrated and made a part of historic discovery by the writer. The pathologist only knew diseases of the sigmoid as concerns malignant growths or benign neoplasms, or a possible sigmoid stricture, ulceration or fecal impaction, and what is now shown by Carpenter's sigmoidoscopy as a sigmoiditis with or without ulceration, was in the recent past supposed to be a proctitis or a colitis, the pathologist only dealing with diseases of the sigmoid as a postmortem observation. Now, with sigmoidoscopy (Carpenter's) we are also able to not only explore the rectum in its entirety, illumine the sigmoid cavity, and with ocular inspection diagnosticate polypus or stricture of sigmoid; diminution of its lumen from encroachment of a tumor by pressure, or even a fecal impaction of sigmoid cavity, as well as the local inflammations peculiar to it. It is surprising how little is known about sigmoidoscopy, or sigmoid surgery from the intra-abdominal standpoint. Even our recent text-books in surgery, gynecology, and on diseases of the rectum and anus, do not mention sigmoidoscopy or sigmoid surgery from the intra-abdominal side, and he wno advances must read the journals. It is surprising how long it takes rectal and general surgeons to learn scientific truths about the anus and sigmoid when plainly told how to do so by the country doctor.

Divulsion of the anus for disease is considered by general and rectal surgeons as a muscle operation, when in truth it is primarily a stretching of the nerves, and secondarily a muscle operation. Rectal surgeons must learn that divulsion of the sphincters, besides its paretic and therapeutic effects on the lower end of the rectum and anus, causing rest, making the anus patulous and allaying irritability, curing pathologic lesions and doing massage, has another function, viz., nerve-stretching of the fourth sacral and inferior hemorrhoidal nerves, thereby cutting off connection between the spinal cord, the levator and sphincters, and placing at rest the bladder, rectum, vagina and perineum. It is to be hoped that rectal surgeons will be able to see and learn this great truth and give the author due credit for the discovery. The writer was informed about a year ago that a Louisville surgeon, in trying to illuminate the rectum and sigmoid cavity, punched a hole with what is called Kelly's sigmoidoscope into the sigmoid and entered the peritoneal cavity, and had to do immediate abdominal section to sew up the hole. Had this surgeon used Carpenter's sigmoidoscopy, which is simplicity itself, full of reason and common sense, that hole would have never been punched. He who knows how to do sigmoidoscopy does not need Kelly's superfluous and dangerous outfit, and he who has to use Kelly's ways should never attempt sigmoidoscopy.

A prominent rectal specialist operated upon an aged gentleman about 60 or 65 years for internal hemorrhoids, and said, "Mr. ———, you will be well in three weeks." At the end of this time the patient was a corpse from cancer of upper rectum and sigmoid aggravated by operation on the piles. Had the rectal specialist used Carpenter's position and sigmoidoscopy before operation he would have been a wiser surgeon, and with more reputation, and not a sadder one now, and his prognosis would have been in keeping with his pathologic knowledge and true condition of his patient. There is a vast difference between aseptic palliative surgery with bad prognosis, and complete life-saving surgery with favorable prognosis given, even in rectal surgery.

Volvulus of the sigmoid is often difficult to diagnose, especially if patient has been battened with opium, and even now it is so common for practitioners to give opium to ease pain and conceal prominent surgical symptoms that otherwise would be highly indicative of surgical interference. The symptoms of volvulus of sigmoid are former constipation, difficult to relieve, attended with distention and tenderness of abdomen or alternating with diarrhea, or following free purgation, severe exercise, indigestible food in large amounts; age of patient as a rule about 20 years; more often in the male than female; palpation may outline the volvulus; vomiting is often a prominent symptom, accumulation of fluid in abdominal cavity at a late stage of the strangulation, failure of bowels to act from purgatives or rectal enemata, or inflation with air; inspection with Carpenter's sigmoidoscopy. Rectal enemata, even with patient in the Carpenter posture, will generally return if the hydrostatic pressure from the rectal side of volvulus does not distend and cure it. By sounding, air inflation or hydrostatic pressure the sigmoid may become lacerated on its perineal side, torn, and leakage into peritoneal cavity result, with infection of the comma bacillus communi and other micro-organisms and toxins, and rapidly produce septic peritonitis. As delay and much taxis are highly unfavorable and dangerous to the welfare of patient, and the integrity of bowel in a strangulated hernia, so are palpation and rectal instrumentation with procrastination dangerous to life and integrity of bowel in volvulus of sigmoid. With early prognosis; early diagnosis; quick, early life-saving surgery; short anesthesia, with minimum of shock; under thorough asepsis, and before structural diseases have occurred, in skillful hands the patient's life ought to be saved.

Diagnosis made of an intra-abdominal lesion demanding surgery. Open abdomen in the median line if necessary, tap bowel with hollow needle or do enterotomy to let out gas or contents, with patient on left side; a short mesentery or intestinal adhesions, a constricting band or diverticulum or structural changes in bowel may greatly complicate withdrawal of the loops of intestine. The bowel may not only be highly inflamed with linear tears of the serosa, but with gangrene at and beyond where the two flexures of bowel have been twisted on each other, and demand a section. If bowel is healthy, return it to its normal position and stitch upper end of sigmoid to left side of abdomen, that portion of bowel opposite the mesentery, or as Senn states, shorten the mesentery, establishing a fold parallel to the axis of the gut. If the flexure is gangrenous in spots, they must be resected, if gangrenous in its entirety, resect the whole flexure

and unite bowel end to end by suture. (Senn entero-anastomosis, Murphy button, or do artificial anus.) If the time is short, and anesthesia is making rapid inroads on the vitality of patient, do the latter operation, as it is attended with less shock, done with more haste and suits more cases; then later on do the radical operation.

Stricture of the sigmoid from various causes demands similar life-saving surgery, according to the surgical demands and structural changes that have taken place in the bowel. If a foreign body becomes lodged in the sigmoid and removal per anum is impossible, an abdominal section with enterotomy must be done for its removal.

In malignant disease of the sigmoid we may be able to resect the growth, as Price, Senn, Bull and Hamilton have done, do an anastomosis or an artificial anus, the surgeon deciding on the condition of patient at time of operation and kind of intestinal surgery suited to each case, and his ability to do quick, life-saving surgery.

That the sigmoid becomes seriously involved in intrapelvic disease, there is not an iota of doubt; that it has not been written upon by prominent gynecologists and authors of prominent text-books is surprising, to say the least. Dr. Joseph Price for years has demonstrated in his surgical clinics the lesions of the sigmoid, complicating surgical gynecology, and volumes might be written on surgical complications he has presented from time to time. Those who know Dr. Price best know he does pelvic and abdominal surgery without the Trendelenburg posture, but he has the *tactus eruditus* to a higher degree, and can see more with his fingers through a two-inch abdominal incision and discern more intrapelvic pathology than many surgeons can see with their eyes through a six or twelve-inch incision and patient in the Trendelenburg position. How common is it for the sigmoid to complicate tubal and ovarian disease. The Fallopian tube, through leakage or infection in salpingitis, hemato- and hydro- and pyosalpinx, or ruptured tube in ectopic pregnancy, causes a local peritonitis of the left pelvis with a sigmoiditis serosa and adhesions to ovary, tube, uterus and bladder, or an ovaritis per se may cause adhesion to the sigmoid and become imbedded in the broad ligament, the tube being in part or in total nested with the ovary and sigmoid, or there may exist an ovarian or broad ligament cyst, fibroid or dermoid, and adherent to the sigmoid. Again, a pus-tube may be adherent to sigmoid on the left, bladder in front, uterus to right, intestines above and broad ligament below, or an ovarian abscess, or multiple abscesses with pus-tube may complicate the sigmoid wall and the abscesses encapsulated in the pelvis by the sigmoid, bladder, uterus, broad ligament and intestines and omentum above, or these abscesses may from time to time, through pressure, attenuation and maceration of the sigmoid wall, perforate the latter as well as the vagina, uterus, bladder, or peritoneal cavity, and leak or discharge and drain into the sigmoid cavity, and patient's life be saved by drainage and evacuation per sigmoid, rectum and anus. How often in doing intrapelvic surgery do we find complications of sigmoid, that is, by surgeons, especially Price's students, who have been taught to do thorough, clean, life-saving surgery and to deal surgically with surgical complications, as does Dr. Joseph Price. Often has the writer seen Dr. Price curette the sigmoid wall, removing pyogenic débris down to the mucosa, healthy tissue, then repair this or these weak places by approximating serosa to serosa with the Lembert or continuous suture. Again, he has seen this illustrious surgeon curette a sigmoid ulcer through a perforated sigmoid wall or excise necrotic spots with the longitudinal axis of the bowel and again repair the bowel with serosa to serosa, taking the Lembert stitch through the serosa and muscularis of sigmoid wall with the finest silk thread and needle. The great reason why some abdominal surgeons have had great mortality following their work is that the needle and thread used to repair intestinal lesions has been too large, more like that of a darning-needle and thread. Again, these surgeons have been afraid to hunt for and find sigmoid lacerations and other intestinal complications, and if found could not sew them. Every physician who contemplates doing surgery should serve an apprenticeship in sewing with some good tailor or seamstress and have a skillful needle and scissors technic that comes only by practice, study and observation. And every graduate should be examined specially on this, and the repair of gut lesions, before receiving his diploma. The writer was raised on a large blue-grass plantation in Kentucky, and his mother used to make him take sewing and tailoring lessons when a young boy to keep him out of mischief and employed, so he was taught hemming, back-stitching, basting, darning, patching, tucking, quilting and embroidery, and his mother's sewing lessons taught him in childhood have been the greatest blessing to him in doing surgery. The most delicate, refined and gentle sewing to be done is sewing the intestine for pathologic lesions, and in plastic surgery one reason why intestinal suturing is so successful in skillful hands, viz., in inflammatory and traumatic lesions is, that if proper approximation of serosa to serosa is done, adhesive inflammation or agglutination of the serosa begins at once, and continues until definitive healing has been done in a few days, then with fine needle and sutures there is no leakage. Furthermore, the writer has been with Dr. Price and seen exsection or resection of sigmoid for stricture or malignant disease or benign neoplasm, and anastomosis with the Murphy button, or intestinal suturing or making an artificial anus when the strength of patient, the anesthesia, and the duration of operation would not permit of a surgical procedure of greater magnitude.

The writer had the pleasure of seeing Prof. Nicholas Senn do some of his wonderful surgery in entero-anastomosis and inguinal colotomy for malignant disease of rectum. The best surgeons always try to do life-saving and not "*ideal surgery*," for the latter is *fatal surgery*, and should be done only in the dead house where the amateur surgeons should begin to operate. It is a great thing to know just how much surgery the patient needs, how much can be borne with safety, and one had better do incomplete life-saving and again operate at another time for complete life-saving surgery rather than do the "ideal" and lose patient during or after operation. The writer has seen the sigmoid, ovary and tube, and appendix vermiformis adherent in one mass, the appendix stretching across the pelvis to sigmoid; also the uterus retroverted upon the tubes and ovaries in Douglas' pouch and sigmoid, bladder, tubes and ovaries internally adhered, so that it required the gentlest touch and manipulation and caution to find a point of cleavage and proper separation of the diseased organs without perforation. Furthermore, the essayist has

seen in his own and Dr. Price's of Philadelphia, uterine fibroids and dermoids attached intimately to the sigmoid as well as to the transverse and ascending colon and appendix vermiformis, omentum and mesentery; ovarian abscesses opening through the lower sigmoid and upper rectum with subsequent healing and contraction of the fistulous ulcers and scars has produced stricture of the bowel at these points. The writer had the good fortune or misfortune to operate for appendicitis and organic stricture of sigmoid at the same anesthesia. The sigmoid was extra long and the stricture relieved by the Murphy button anastomosis. The appendix vermiformis was dilated size of thumb at its cecal end, inflamed and filled with soft feces and appendoliths, and required immediate appendisectomy.

In conclusion, the essayist must state that all surgeons who do prompt, life-saving surgery must camp upon the domains of pathology in abdomen and pelvis and do life-saving surgery, and will meet sigmoid and other intestinal adhesions that must be promptly separated, and there must of necessity be more or less serious intestinal lacerations that must be surgically repaired with as much precision, judgment and gentleness as a stab or gunshot wound of the stomach or intestine, and he who can skillfully and successfully repair these traumatisms will save more lives than he who does dashing surgery and neglects these intestinal lesions, trusting to nature. To repair these lacerations it takes time, patience and perseverance, strong will-power and fortitude.

The essayist cannot close without expressing the most sincere and profound thanks to Drs. Price, Senn and Murphy for the valuable lessons learned through them in surgery and surgical pathology.

THE TREATMENT OF SEPTIC PERITONITIS BY IRRIGATION.

Presented in the Section of Obstetrics and Diseases of Women, at the Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Septic peritonitis has been, and is now, to the surgeon, the practitioner of general medicine, as well as the obstetrician, a "word of fear." Forty years ago we groped in darkness as to its cause, and now we are about as helpless in its presence as to a curative remedy, as when the fathers practiced blood-letting with a free hand and gave cathartics in heroic doses, or, on the other hand, administered opium to narcotism, keeping the patient in this condition until the disease exhausted the patient or the patient wore out the disease. We are no longer in the dark as to the cause of septic peritonitis, and have made vast strides in the way of prevention, if not yet successful in the cure of the disease when fully formed. We have adopted the consensus of opinion of the best-informed pathologists, that practically all cases of peritonitis are caused by infection, though they do not deny the possibility of its idiopathic origin. It is not possible today to state positively that exposure to cold, strains, and rheumatism never directly cause peritonitis, but that they do is very doubtful.

Septic inflammation of the peritoneal sac is amenable to the general laws that govern septic infection of other tissue. The progress and termination of inflammation in this tissue are modified by its structure and function. We need but to remind you that the peritoneum is a shut sac lined with epithelium. Underlying this membrane and connecting it with the lymphatic system are numerous lymphatic vessels, to the extent that it has been called a great lymph sac, with large capability for absorption, as well as possessing the function to secretion. The large capacity to absorb is not surprising, when we take into account the extensive surface. In all its parietal and visceral enfoldings it presents nearly as large a surface for absorption as the integument that covers the body. The older pathologists and surgeons wrote over against this organ "*nole me tangere.*" We know that this is a false accusation; in proof thereof we have not only the daily operation of surgeons, in which it is roughly handled, but the interesting experiments of Rinne, who has shown that the peritoneum will absorb large amounts of septic material if not subjected to injury, and those of Pawloki, in which non-pathogenic micro-organisms and sterile foreign bodies were introduced into the peritoneal cavity without evil results. Much depends, in all cases, on the general susceptibility of the individual to infection and on the vital resistance of the peritoneum itself. Where the susceptibility is great and the resistance feeble, death follows, and where the opposite conditions exist life is saved.

Another factor that plays a large part in determining the result is the character of the infection, and the culture media in which it may find a ready soil to grow. "The characteristic of primary lesions is the development of hyperemia of the membrane, with formation of more or less copious glairy exudate, which, if it is in any quantity, rapidly becomes organized and produces adhesions," which bind the coils of intestines together, attaching them firmly to adjacent organs. The character of this exudate varies greatly with the severity of the inflammation and its provoking causes. While the plastic element is practically a constant factor in its make-up, its general character may be purely plastic, serous, or purulent, and in very infectious cases, sanious. The purely plastic variety occurs in localized areas as a rule, and follows any simple aseptic injury to the peritoneum, in fact, is nature's response to injury, with the express purpose of repair. It conserves the life by walling off and limiting the spread of septic inflammation, resulting in a circumscribed abscess, as seen in many cases of appendicitis. It occurs after all surgical operations, and rapidly unites opposing peritoneal surfaces, covering up and encapsulating, as it were, intra-peritoneal sutures. The infective bacteria or their ptomains have a peptonizing or solvent power over tissue. So, in infective peritonitis, we have this plastic exudate changed, modified, liquified: no longer endowed with adhesive power of gluing togething opposing surfaces. On the other hand, the exudate may be largely serous, sanious or purulent, owing to the nature of the infecting microbes—whether they be pus-producing or not.

A purulent peritonitis is also very distinctly a septic peritonitis, but clinically and pathologically we are forced to recognize the fact that, either through a difference in vital resistance or in the virulence of infection, the same classes of micro-organisms produce in one case what we call septic peritonitis, and in the other the purulent form.

Inflammatory processes not only differ in their exudates, but present different morbid processes, for the septic peritonitis is invariably widespread, involving the entire peritoneum, while the purulent form is

often localized through formation of fibrino-plastic exudate, which limits its spread. It is probable, however, that these difference are in degree, not in kind, for, in those cases of septic peritonitis which live long enough, the exudate, which would have appeared serous had an early autopsy been made, is distinctly purulent and often putrid, this difference in degree depending, as we have said, on the severity and variety of infection and the individual resistance. In this form we find not only a copious exudate which covers the viscera, but fluid in large amount in the abdomen, in which float layers of coagulated fibrin. Should death occur in the first twenty-four hours of septic peritonitis, as it often does, no well-marked changes are visible to the naked eye, save in some cases the duskiness of the peritoneum, and the presence of sanious, blood-stained serum in the dependent parts of the abdominal cavity.

In all forms of peritonitis the walls of the alimentary canal in the parts become friable and edematous, while their peritoneal coat is readily detached from the muscular layers. Whatever may be the cause of original disturbance, the pathologic process which results in the peritoneum may be divided into three varieties: It may be localized and plastic, general and sero-plastic, or serous, changing to purulent.

My object in this paper is not to dwell upon the etiology, pathologic anatomy or symptomatology—which is generally acknowledged and well understood by the profession at large—further than to serve the purpose of confirming the rational principles upon which I base the proposed treatment.

There are certain cardinal principles well understood by the profession in the treatment of septic inflammation wherever found, viz: If possible remove the focus of infection, or by free drainage and irrigation dilute and remove the toxic products. This method is generally relied upon rather than the destruction of the pathogenic micro-organisms by germicides. The profession seem to be slow in applying these principles in a radical way to diffused septic inflammation of the peritoneum. Drainage and irrigation are practiced in circumscribed inflammations of the peritoneum with excellent results in many cases. But this method often fails, the infection spreads to areas not drained, and soon the patient succumbs to septicemia. If we could introduce some hot non-irritating fluid into this great lymph sac in such quantities as would reach every square inch of its convoluted foldings, so that it would seek out and dilute the lurking poison, and by a constant inflowing current and a corresponding outflowing current remove the poison, it would fulfill the indications of rational treatment. The normal salt solution fulfills all of these requirements. The following clinical cases will illustrate its use and effects:

Case 1.—Mrs. N., aged 40, was being anesthetized preparatory to the removal of a double ovarian cyst; during the exciting stage of the anesthetic she struggled with great vigor, which produced a rupture of the left larger cyst. The contents of this cyst we estimated would measure one and a-half gallons and it was of a brownish color and mucilaginous consistence, that clung to the abdominal viscera with such pertinacity that it required gallons of warm salt solution poured into the abdomen, and the free use of the hands, before it could be removed so as not to be detected by the sense of touch. The empty sac, together with a smaller right ovarian cyst, was ligated and removed. A large glass drainage-tube was placed in position and kept free by means of suction as often as any fluid accumulated.

There was but little, if any, shock, and not much nausea and vomiting from the anesthetic, for the twenty-four hours following the operation, the temperature and pulse remaining nearly normal during the same period. But at the end of thirty-six hours, thirst and vomiting increased, pulse and temperature crept slowly but persistently upward, until at the end of forty-eight hours the temperature was 103 degrees F., pulse 130, thirst intolerable, and vomiting every few minutes a dark brown liquid, restless tossing in bed, with mental faculties wandering. My patient was fast sinking from toxemia and I determined to try what thorough irrigation would do to save her. I had several gallons of warm solution prepared. The glass drainage-tube was drawn up two or three inches and the irrigating tube introduced, but the fluid would not enter the abdominal peritoneum until the wall of plastic limiting exudate was broken up, then the fluid flowed into the abdominal cavity, distending its walls. Another tube was introduced alongside of the irrigating tube through the glass drainage, and the water was discharged through it; about four gallons of the hot (110 degrees F.) salt solution was used in the first irrigation. There was a marked change in the appearance of the patient at the close of the treatment; the face lost its pinched and haggard appearance, the pulse fell from 130 to 212 per minute, temperature from 103 to 101, vomiting ceased, and the bowels moved freely within a few hours; thirst was allayed, and the patient expressed a desire for something to eat, hunger taking the place of nausea. Irrigations were repeated every four to six hours, that is as often as the temperature and pulse began to rise. Each irrigation promptly brought down the pulse and temperature. These irrigations were kept up at lengthening intervals for four days, when the temperature and pulse remained normal.

Case 2.—Miss M., aged 23, was brought to St. Joseph's Hospital with a history of chill, followed by high temperature, irritable stomach, tenderness over lower abdomen, with gradual development of tumor in right iliac space. This tumor suddenly disappeared, discharged without evacuation from vagina or bowels. Pulse kept rapid, temperature 103 and upward. Emaciation progressive. In a few days the tumor began to rise or be manifest to palpation, and was six or seven inches in apparent diameter when brought to the hospital. Her temperature was 102 to 103 degrees F., and pulse ranging from 120 to 130 per minute when she was operated on. On opening the abdomen a tumor was presented, that was adherent to omentum, intestines and pelvic wall, whose cavity it completely occupied. In attempting to separate the adhesions the tumor sac ruptured and a half gallon of very offensive smelling pus flowed; part mingling with the viscera, part externally. The sac wall proved to be separated folds of the broad ligament. The sac wall was emptied and stitched to the lower angle of the wound in abdomen and packed with gauze. There were quite extensive adhesions of the bowls together and also to abdominal wall and omentum. These I separated by introducing the hand into the abdomen, at the same time flushing the peritoneal cavity with liberal supplies of hot solution—temperature of solution about 110 degrees F.—poured from a pitcher. The coagulated lymph that coated the bowels was easily removed by slight friction and came away in flakes with the refluent current. The temperature and pulse dropped very considerably, as observed soon after being put to bed. Drainage of abdomen by glass tube was carried out as usual, by withdrawing the fluid accumulation every forty to fifty minutes. Temperature and pulse began to rise in twenty-four hours, which was promptly controlled by free irrigation with hot salt water. This treatment was repeated every few hours, as often as temperature showed tendency to rise, or pulse to increase in frequency, each time promptly reducing both. This treatment was kept up for four or five days, until there was no longer a tendency to rise of temperature or increased rapidity of pulse.

There was in these two cases prompt reduction of temperature and pulse-rate each time the irrigation was repeated. The salt water acted as it were by transfusion through the peritoneum, producing free liquid evacuation from the bowels. Vomiting ceased immediately after first irrigation, thirst disappeared, and the first patient expressed a desire for food within two hours after treatment. Irrigation of the peritoneal cavity for septic inflammation or infection is in accord with the rational treatment of infection in other tissues, that is, dilution of the infection and removal by free drainage. Disinfection by germicides can scarcely be accomplished in any tissue. We would not think of using a germicide in this great lymph sac. The hot (110 degrees F.) salt solution is non-

irritant to either mucous or serous surfaces; it does not dissolve and remove the epithelial covering from either surface, as does pure water. The heat stimulates the flagging heart and nerve centers. The rapid transudation through the capillaries and lymph spaces of the bowel coats dilutes and flushes out the toxins already there. This is demonstrated by the marked relief so promptly manifest in heart's action, temperature and cerebral function. In order that this treatment be efficient it must be thorough, that is, the irrigation fluid must reach every part of the infected peritoneum. This can only be accomplished by using large quantities, and where there is plastic exudate, sealing the surfaces together. An opening in the abdominal parietes must be made sufficiently large to admit the hand, and with the fingers deftly separate the adherent parts, and with gentle friction detach the coating of coagulable lymph, for it is infected. While this is being done a good stream of the irrigating fluid should be kept constantly circulating, so as to wash away the detached flakes of lymph, as well as the infected culture fluids and pyogenic cocci.

The saline cathartic treatment of septic peritonitis, as practiced to a large extent by modern surgery is rational, and is successful in cases where the focus of infection is limited. It sidetracks the toxins on their way to the general system. But it fails in the prime indication to remove the center of production. Irrigation does both. If the focus of infection be in the sinuses of the uterus or its adnexa, removal is indicated; without hysterectomy irrigation of the peritoneum secures more perfect elimination by way of the mucous surfaces of the bowels than any other method.

THE MEDICAL TREATMENT OF APPENDICITIS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ELMER LEE, A.M., M.D., Ph.D.
NEW YORK, N. Y.

There are no new truths, but there may be new phases of that which is old. Progress means the development of new applications through invention and study. Onward and upward is the direction in which the scientific world moves, and no one dares forestall the possibility of discovery in medicine that awaits the higher intelligence. The bases of the unknown triumphs which will be the happy surprises for the future have their preparations in the knowledge and handiwork of the present. The tools increase in delicacy, and number and become more and more adapted to the work of attaining the ideal of crafty man. Methods of using old forces for pleasure or service in the arts and the sciences have greatly changed, and the evolution is for good. The betterment is often a question for doubt by the pessimists, but judged from the standpoint of the universe, not by the little circle in which one mind operates, the roll of the years brings advantages to each succeeding generation which the preceding did not live to witness. Everything moves toward some new standard or away from an old one. Nowhere is the work of change more clearly revealed than in the duties and privileges of the practice of medicine. Education teaches every man to think for himself; the printing press now puts that thought into imperishable tablets. And what a monster tablet it would require to give a place to all that is said lately on the subject of appendicitis. For one, my belief is that every new thought which is the honest opinion of the mind should be spoken, even if it be but a repetition.

Who among physicians, then, is entitled to speak with authority upon disputed questions, for it is the experience of all of us that we claim the privilege today of correcting the errors of yesterday. My plea is for an open mind in the consideration of medical practice. Exclusive surgery desires to assume the responsibility for the treatment of the inflamed appendix, based upon the belief that it is only surgery which possesses the magic of cure. Some physicians think that too much dependence is placed upon surgery, and that it is in many cases a dangerous intrusion without warrant. These two classes are the extremes and it is well to understand the limitations of the question before us. It is sometimes surgical, but more frequently medical, and as general practitioners it is desirable to examine the possibilities for good that are included in the medical treatment of appendicitis.

The cause of appendicitis is seldom if ever exactly determinable, but as a rule, the health of a part depends upon the vigor of the general system. When the symptoms of a localized disturbance in the intestine or appendix reach a point of sufficient importance to require medical counsel, the highest welfare of the patient calls for a conservative method of treatment which will prevent as far as possible the danger of subsequent complications and surgery. A healthy body will not favor an appendicitis, while a safe and rapid return to health, if it is impaired, will either prevent visceral inflammation or be the wisest course in the cure. General measures first and localized afterward, is a broad and effective plan of action in therapeutics.

An immediate, but not the first, cause of appendicitis, is a partial or complete clogging of the circulation in the vessels of the appendix. No satisfactory explanation known to the profession will cover every case. The first determinable effect is congestion, closely followed by exudation of serum and lymph into the mucous and muscular tissues of the appendix and its environment. The exudate stops both venous and lymphatic circulation, which is naturally followed by swelling of the mucosa and other structures of the organ. Whatever particles of fecal matter happen to be within the canal of the appendix at the moment are either pressed out into the cecum, or they may be dammed off by a stricture and retained, and in consequence, undergo certain chemic changes. The material may be crystallized by chemic action (the appendolith), or dissolved and reabsorbed, or discharged into the intestine if the swelling of the appendix subsides without destructive inflammation and rupture into intestine or peritoneum. With what is happening, pain is likely to be a prominent symptom at the point affected, yet in some cases pain is absent. But in any case there are enough symptoms from which to safely form a liberal and inclusive treatment of the patient, also broad enough to include the local part.

It is probable that vasomotor control of the artery of the appendix and its branches is temporarily either depressed or exalted, and that there is for this reason too much blood or not enough in the affected part, each of which conditions could be the factor of danger in suitable cases. Inflammation ensues upon conges-

tion, destructive changes take place rapidly under the influence of an increase of heat and chemic decomposition of fluids and tissues, and at this stage the bacterial scavengers are present to help remove the retrograde products of inflammation. The microbes are regarded as incidents of disease and pathologic change, and serve a further useful purpose in that their presence in excess occasionally confirms diagnosis. They may confirm but not necessarily affirm diagnosis.

The power to create as well as to cure disease resides in the body and never outside of it. At this stage of appendicitis it is purely medical, and if always rightly treated it could not be surgical, save in certain and rare instances. If neglected or improperly managed, secondary changes follow, such as ulceration, sloughing, necrosis and rupture, and even in these conditions spontaneous cure is possible and frequent. But it must be admitted that in such cases the safer course is to employ the assistance of surgery.

As soon as the physician suspects even that there is a possibility of appendicitis, upon first seeing his patient, the safe course is to be on the guard, and by this is meant to treat the patient, rather than the disease, with the view of preventing that which is suspected, or if too late for that, proceed in such manner as to actually give the best chances for a rapid recovery, and thereby provoke the least damage to the abdominal viscera.

In all acute inflammatory diseases of the intestines my experience proves that food should be withheld from the patient for one, two, three or four days. In cases where fever is a prominent symptom, the precise and life-saving course warrants the forbiddance of all food so long as the elevated temperature remains. All alimentation, either by mouth or rectum, can be but partially digested and assimilated during the active stage of inflammation. Even that amount of food which is capable of assimilation is in excess of the needs of the system at this stage of the case, and such nutriment as is not completely digested is a further increment of danger, together with other waste matter which forms the material for retrograde chemic action and autoinfection. When food is needed a keen hunger will properly indicate it, and at such time moderate feeding is permissible, at regular and long intervals. The hours for meals should be seven, twelve and six o'clock, as nearly as practicable. Food too frequently given is a general mistake for which there is no justification. The selection of food is important. A diet of fresh vegetables and prepared sweet fruits stands highest in effectiveness, besides, it is better relished by the convalescent. Good vegetables are procurable at every season of the year and in almost every locality, and always suitable. The diet need not be exclusive, although a liquid one is freely advocated by some physicians as the best. Nor is it strictly important that meat be omitted, indeed, the diet could be a mixed one if actual hunger is made the guide as to when the feeding should begin. The main point is not to begin alimentation too early, not to give too much or too frequently, and with particular instructions for most thorough mastication. Casciani concludes from experimental studies that:

1. In disease or during convalescence, a diet of fresh, well prepared vegetables diminishes urinary toxicity.

2. Urinary toxicity is greater where the individual lives on a mixed diet and less where a vegetable diet is adopted.

3. A meat diet increases urinary toxicity in direct relation to the quantity consumed.

From the beginning of the treatment, six to eight ounces of fresh, pure water, administered with disciplinary regularity each half hour or each hour for the first, or first and second days of treatment, then if the case improves, let the intervals be two hours, is a therapeutic resource of striking simplicity and exact scientific value. The only valid counterindication is the use of discretion in disturbing the patient should he be asleep; none other exists to my knowledge. Internal hydrotherapeutics are coming more and more to be accepted as the line of investigation upon which a sound basis of treatment is possible. Recently the University of Heidelberg voted this branch of therapy into a full professorship, thereby recognizing the importance of less and less employment of drugs.

It has been observed that a free use of pure water is an effectual laxative, obviating more drastic methods. The laxative effect is aided by dissolving small pinches of common salt in draughts of hot water, given at the regular intervals. Purgation is desirable, but when the intestine is undergoing active inflammation, harsh purgatives are seemingly useful, but actually harmful. This is owing to the irritation excited in the mucous walls of the intestines, and also to the fact that the purgation is at the expense of the constituents of the blood.

The hot saline or soapy enema will free the colon by quickly washing down the fecal contents. The small intestines need no purging, for fermentation and decomposition are generally to be looked for in the ascending and meso-colon. Such cleaning of the small intestine as may be useful will naturally follow upon the administration of hot water by the mouth, and from the effect of hydrostatic enteroclysis. It requires two to three quarts of solution to ascend the colon and reach the cecum in an adult and one-half the quantity in a child. Irrigation is best given in the knee-chest position, though it is immaterial in what position the water enters the colon, so long as the quantity introduced is sufficient to partially distend the bowel all the way up to the cecum. It may not be able to accomplish this satisfactorily in all patients, or perhaps not at the first trial. But the water can be made to go to the cecum and do its bidding as far as the opening of the appendix, if used with a little patience and perseverence. The colon, free of its contents, is an important beginning in the management of acute appendicitis as well as in other forms of enteric inflammation. A short rectal tube, four to six inches long, of large caliber is the one now commonly used, the long tubes are no longer generally employed. Water with pressure behind it will find its way more safely and naturally without the use of a special colon tube, which in practice may get no farther than the rectum or first fold of the sigmoid flexure.

The oil treatment of appendicitis consists of the substitution of either sweet or olive oil for the plain or medicated water enemas, and to some extent oil is administered by the mouth. The results are said to be highly satisfactory, which no doubt they are, though personally, my experience is limited to a few cases.

It is possible and safe to use morphin and codein for the temporary relief of pain without impairing an inclusive diagnosis or the chances for rapid recovery, provided the more important features of the

treatment are faithfully and skillfully instituted and continuously maintained. Of this there can be no doubt in acute cases seen at the beginning or at least early. If the practitioner has not sufficient experience with practical hydrotherapy to feel like placing his whole confidence in it, a moderate administration of reputed internal antiseptics will do no great harm if the foregoing hydrotherapy is not neglected. The advantages from prescribing the so-called internal and intestinal antiseptics are based upon belief and can not stand the test of unbiased experiment. Dr. Turck and others have sufficiently demonstrated the truth of this statement for all time to come.

At the last German Congress of Internal Medicine, April 13, 1898, the addresses on "Intestinal Antisepsis" and "Autointoxication" proclaimed the paucity of our knowledge on this subject and the worthlessness of all antiseptics for this purpose. They are only kept in vogue by the advertisements of the manufacturers. Only one or two voices were raised in dissent to this timely and sweeping condemnation, which leaves only prompt evacuation of the contents of the stomach and intestines for our reliance in intestinal autointoxication. The German profession has reached this sound conclusion rather late, but still in time to correct an abuse and thereby better serve their patients in the future.

In severe cases of painful appendicitis cold water applied to the affected area of the abdomen is grateful to the patient and helpful in allaying both pain and excessive heat, consequently such applications aid in hastening restitution of the inflamed appendix. My favorite compress is a small napkin saturated with ice water, frequently renewed, with a piece of flannel laid over it as a protective against wetting the bedding. The ice coil and the ice bag, if not too weighty, are convenient and useful. Gentle massage of the abdominal wall contiguous to the appendix is beneficial in cases where the inflammation is not of the fulminating character. Sometimes a cold compress may be advantageously followed by one wrung out of hot water. But where there is excess of local heat with fever, the cold works better, all things considered. The hot poultices of flaxseed and other slimy material confer no important benefit upon the patient; their chief claim for usefulness depends upon an old tradition too sacred to be suspected by the unwise friends of the sick, and unfortunately the medical adviser himself even in some great centers of medical teaching indulges in this ancient but bad practice. Where a hot poultice might benefit one of these cases ninety-nine cases would be injured. The affected area needs no further heating, but on the contrary, the aim should be to arrest the inflammatory process by the cooling and tonic effect of cold water applications. Tonic and stimulating aidance to the nervous system, often badly needed to arouse the bodily vigor and resistance, is assisted by brisk rubs along the spine by the hands dipped in cold water, or with a sponge cooled in ice water. The effect is very frequently a magic influence for which nothing else in therapeutics can be a substitute. The cold shower or spray would be still better if it were convenient, and the patient was disposed to submit, a thing not always to be secured, because of an unnatural fear instilled into the mind against cool water as a remedial agent. Hot water used in the same way would act satisfactorily as a substitute if the objections against the cold water could not be overcome. It is to be remembered that hot water is next in importance to cold in a therapeutic sense, and may in suitable cases be substituted for it.

Bodily bathing in sickness is today almost uniformly employed; it is therefore but necessary to mention it. If the fever runs high, the greater the importance of speedily lowering it by natural means, and the combined influence of internal and external usage of water in large quantities will more quickly and surely bring about a normal temperature, when safety and permanency are considered, than is possible with chemicals. If there are those who would use the chemicals, let them not omit a full and thorough application of water therapy and its auxiliaries, such as good nursing, pure atmosphere, sunlight and sunshine freely admitted to the sick-room, together with that most urgent therapeutic measure of total abstinence from food during the first few days of the sickness.

General massage has a place in the treatment of appendicitis, in that it supplies the physical exercise essential for the highest interests of circulation, respiration and digestion. Ample resources are possessed by a body whose vigor is conserved during acute localized inflammations to check destructive tendencies and restore order. In fatal cases it is the disordered state of the system that makes death imminent, and not the appendicitis, for the latter is a symptomatic expression of bodily sickness. Ulceration, sloughing and even necrosis are not necessarily fatal in a body fortified with hydrotherapeutic management.

Rupture sufficient to permit of the escape of fecal products into the peritoneum, according to Morris, would seldom happen if medical treatment from the inception was properly understood and directed. The same author and operator further candidly affirms that medical treatment would save all but a few cases from the need of surgery, if medical practice was inclusive and scientific. But if a choice is to be made between an up-to-date, skillful surgeon and an average physician, he decides that the chances of the patient would be better subserved by the former. Under the aggressive teaching of modern surgery many physicians are apt to lose courage in the attempt to control appendicitis, and it is not strange where the sole dependence is placed upon the healing effect of purgatives, opium, poultices and so-called intestinal antiseptics; and in those cases where that mistake of forced feeding at frequent intervals is permitted, together with other errors of medical management, it is quite natural that alarming symptoms should occur leading to a possible surgical crisis requiring an operation. A rupture with escape of fecal filth into the peritoneum is not a pleasant thing, but it would rarely occur, according to the experience of one of the foremost surgeons, if the physician was capable of doing his whole duty properly and at the right moment.

Large abscesses, wherever located, menace health and life, but there are conditions which make the presence of pus less dangerous than an operation would be in an unsuited condition of body. In such cases the physician and surgeon wisely co-operate, thereby justly sharing the responsibility. An abscess which is reasonably accessible in or through the abdominal wall, the same as elsewhere in the body, is easily opened and drained, but amputation of the

appendix for a thickened mucosa or for almost any other reason save rupture, or where there is positive diagnostic certainty that rupture into the peritoneal cavity is imminent, frequently furnishes cases for the surgeon which still rightfully belong to the province of medicine.

Chronic cases should come under a modified plan of treatment based upon the principles herein set forth, and kept within the control of the physician till all the symptoms are long since passed. A healthy colon is the most important salutary factor in every form of appendicitis, for a clean colon is likely to be accompanied by a healthy appendix. If there is a danger of appendicitis or if it has already occurred at some previous date, the successful way to prevent interval and other forms of appendicitis lies within the reach of such an one who happens to have a physician who comprehends, first, the value of regularly cleansing the colon once a week, by the hydrostatic injection of two to three quarts of blood-warm water. The second great requirement for prevention of recurrence is moderate bodily exercise, performed with daily punctuality. The third is moderation in eating. The fourth is the habitual use of a sufficiency of pure water as a drink to satisfy the requirements of a body that is more than three-fourths fluid.

There remains one point more; the experienced and really capable physician is entitled to a fee proportionately important to that which surgery expects, when the equivalent in service is rendered. Medical treatment strives to save and prolong human life, and when the result to the patient is the same, whether through the assistance of surgeon or physician, why need the fee be widely different? The fee of $500 to $5,000 may or may not be too much for an appendectomy, but if the same end is safely and satisfactorily attained by the practitioner, why should his fee be less than that of his surgical contemporary? When the emoluments for medical work, skillfully and successfully accomplished, whether by surgeon or physician, are relatively similar, there will be an incentive for closer co-operation, higher medical thought and better treatment than prevails in some places at this time. The practitioner is entitled to the full equivalent in exchange for intelligently performed services in the conservation of human life, and that equivalency should correspond to the measure of success in each case treated, with a proper and due regard for the skill, experience and years in medical practice.

10 W. 49th St.

DISCUSSION.

Dr. E. A. J. Rogers, Denver—One has no idea how refreshing it is to one who has so long been in the dark to hear a physician offer, with such assurance and confidence, that appendicitis can be treated medicinally with such results as he has stated. I congratulate him upon the successful treatment he has given his patients in this disease. From my standpoint I differ with him; I am in doubt whether absolute medicinal treatment can be relied upon in appendicitis. If any medicinal treatment is good, that which Dr. Lee outlines is the best I have heard. If men would follow more conservative lines many cases that now must be operated upon, sooner or later, would not have to be operated upon.

I find myself diverging from Dr. Lee in regard to the remarks made early in his paper; his points in regard to etiology are different from those I was taught to believe in. The primary cause of appendicitis I formerly believed to be a mechanical one. The mucous membrane of the intestine is cleansed by an antiseptic fluid which is always present. Here may be found a little defect, and sometimes a little cul-de-sac, and here we find a stasis in the normal cleansing process. Now, the organisms which Dr. Lee has mentioned come in and play an important part. Now then, the important point over which surgeons have been fighting comes in—what is the infection which causes the trouble? So soon as that can be determined, and we can state how the infection comes in, then we can lay down definite rules to guide us; then lay down rules as to what are medical cases, what surgical cases, and what cases are best to let alone. Before this time, we are treating appendicitis in the dark.

Yesterday afternoon, in the Section on Anatomy and Surgery, intense interest was given to the discussion which took place on the subject of appendicitis; this Section should have discussed this subject there in the surgical department and the whole topic studied together.

A great point for us to consider is the nature of the infection. So soon as this infection takes place, swarms of organisms begin their work of destruction. If nature is able to master them, the disease is a trifling one, but if not, death may follow. This point is an all important one, and it is the inability to determine this point that prevents us from forming the rules I just mentioned.

Of course, there are surgeons who claim that this disease is absolutely and entirely a surgical one, but their arguments will not hold. This disease should be treated by the physician and surgeon together. If the surgeon is simply a mechanical one, then Dr. Lee is right in not calling him in the beginning of a case; but a true surgeon is one who avoids the knife. A true surgeon is one who knows how and when to use the knife. If Dr. Lee had a surgeon he could trust and rely upon, he should allow him to see the case in the beginning. I do not believe that Dr. Lee can tell in the beginning what course the disease is going to take, and it is only fair that a conscientious and careful surgeon should be called in the case from its very incipiency. I must say in defense of the surgeon, if we trust him, call him early.

Dr. Henry Sewall, Denver—From personal knowledge on the subject I can agree heartily with what Dr. Lee has said, particularly on the discussion between the physician and the surgeon. I speak from the physician's standpoint. You are called to see a case suffering from symptoms that suggest to you the idea of appendicitis, at least, it presents itself to you in a manner dependent upon subjective data. If the observer believes pus has formed then no medical treatment; if the observer believes that inflammation is going on to pus formation, then no medical treatment; these are cases for the surgeon. I suppose the common treatment of today is to eliminate functional disturbances which may give rise to symptoms. There is no one here who has not found typic symptoms of appendicitis disappear like magic when the colon was thoroughly emptied; but, if the symptoms are not relieved, then the case calls for the exercise of judgment. It seems to me that the average physician should take a place mid-way between those who urge that every case of appendicitis should be operated upon and those who do not operate upon their patients until almost the time of death. I will only say this, that suppose you let a case of appendicitis go on to recovery—so-called—under medical treatment, the treatment the reader of the paper suggests in the body of his work, you expose the patient to certain dangers. Not long since I had under observation a patient who had multiple abscesses of the liver; at the autopsy there was found a cecal abscess. The man disclaimed ever having had symptoms pointing to appendicitis. I believe these cases are quite common; in my experience I have seen four or five of such cases. I can not help but think that cases of appendicitis are to be regarded as cases that belong to sanitorium care.

Dr. Herrick—I have heard the question discussed ably and well from different standpoints; this question was discussed in the surgical Section at great length. The physician and the surgeon are antagonistic in the consideration of this subject, the former dealing with certain phenomena and the surgeon dealing with the facts. I make a point that the physician has different ground to stand upon than the surgeon.

The question has arisen as to the cause of the disease. Are not all processes of digestion due to the secretions? The intestines and their attendant glands are of the first importance and consequence. If that is so, we may well look to the condition of the secretions. As a matter of fact, we generally find in appendicitis disturbances of the secretory organs. Disturbances of the liver and other disturbances causes changes in the whole portal system; disturbances of the natural secre-

tion cause a disturbance of the colon. As a result of irritation we have congestion of the veins of the mesentery; presently we find a cause in the distension of the colon from the impairment of circulation and secretion; a subacute inflammation follows. An impaction of the intestine with fecal matter is then noted. It is this condition of impaction of the colon with arrested secretion that, in all probability, is the cause of appendicitis; at least, it seems to me to be so. Let us not cut off the appendix; let us not give up the idea that we can relieve these patients. Treatment by diet is successful. I have practiced medicine thirty-seven years, and I rarely lose a case of appendicitis. In the last ten or twelve years I have lost but four cases. As to the treatment, one generally applies ice-bags. Do not give opium or anodynes.

Dr. BAILY, Kentucky—I am a little skeptical about Dr. Lee's promising as much as he claims by the methods mentioned. What has he done in this line? How many cases of appendicitis has he treated by the methods mentioned, and with what success? As a general practitioner, I am bound to say that the diagnosis at the very beginning is the most difficult one to make, and it is at a time when it is most important that we should make it. Realizing the responsibility, I am most willing, as early as I suspect the disease, to call in an intelligent surgeon; I have never called one in where I have had reason to regret it. In the majority of cases the general practitioner should have a consultation with a skilled surgeon. Many of these cases get well without treatment; but the surgeon who can do the operation without mortality ought to give the patient a chance for his life.

Dr. TYSON, Philadelphia—I have but a few words to say, and in confirmation of what Dr. Baily has already said. I believe that cases of appendicitis are difficult of diagnosis. My experiences lead me to believe that many cases of supposed appendicitis that get well under medical treatment were not cases of appendicitis at all. In cases of appendicitis I want a skilled and competent surgeon, not for operating, but for his judgment. I have had surgeons who have had more experience than I have had; their judgment will help me. If I am satisfied that appendicitis exists, I am willing the appendix should be removed.

Dr. WALKER, Philadelphia—A gentleman, who lived in Philadelphia was seized with appendicitis; I attended him through the attack, and at no time did the surgeon or I think that an operation was desirable. The gentleman desired to leave the city, and he was advised, therefore, as there might be a recurrence of the attack, that it would be better for him to have an operation performed. The patient was perfectly well, and rode much about the adjacent country, on the street cars, etc., with no temperature or any evidences of trouble. A day was fixed for the operation. At the time of operating, there was found one pint of pus back of the colon; this had given no evidence of its presence or pointed toward any danger to life. To me this was a very interesting case; I thought the patient was cured of his appendicitis, but he was not. The appendix was swollen and perforated.

During the succeeding year I saw a case that no one would admit the necessity of operating upon. He passed through the attack; later, the surgeon again saw him. He was examined, but there was no evidence of disease whatever. This year, in May, he was taken with symptoms of typhoid fever. I happened to be present in the doctor's office when he mentioned the unpleasant symptoms. The doctor prescribed for him, and he was treated three weeks for typhoid fever. I reminded him of the previous attacks of appendicitis, and I thought of a pus collection somewhere. A pus sac was found, and the patient is now perfectly well. The pus had been lying there from June to May. This has been a lesson of value to me. Although I believe that the majority of cases are cured by medicinal treatment, still we can not be too careful.

Dr. JAMES, of Missouri—I have been led to believe that appendicitis was a disease that belonged exclusively to the surgeon, and that the general practitioner had no right to claim any knowledge of the disease. Public sentiment demanded that the cases be all turned over to the surgeon.

Water is of great value in the treatment of this disease both internally and externally; I also like it used per rectum. I have used the cold applications as described by Dr. Lee and I use it especially if there be high temperature. But, I prefer the hot applications, because, as a rule, the temperature is rarely above 102 F. I have overcome the demand for anodynes, I instruct the nurse to keep up the hot applications even at the expense of rest.

Dr. H. A. WEST, Galveston, Texas—I can not conceive any more important subject in medicine than this. I array myself on the side of many here in combatting the idea that any antagonism between physicians and surgeons exists as mentioned. The responsibility of the physician arises from the fact that he is usually the first to see these cases; they come to him in the first place. The man that assumes the responsibility to himself of treating these cases as medical ones and imagines antagonism as mentioned is assuming a serious responsibility. His first thought should be the care and cure of his patient. So far as medical treatment is concerned, cases that get well recover by themselves. Medical treatment amounts to extremely little. As Dr. Tyson has said, when the diagnosis of appendicitis has been made, I want the advice of an able and experienced surgeon; I want one who has had the opportunity to see many of such cases. It seems to me that it is the physician's duty to call to his aid a surgeon. I have seen a patient with a normal temperature and pulse and who was feeling perfectly well; yet a perforated appendix was found; nothing short of an operation would have saved that case. Water given internally, externally or eternally would not have saved such a case.

Dr. C. F. AHRER, Fort Madison, Iowa—I desire to say that we are all more or less influenced by our prejudices or peculiar trends. Many men who have a surgical trend or prejudice naturally desire that all diseases may become surgical, and must so be treated, and men who have a medical trend wish to cure everything with pills and powders. In some cases both these men are wrong. The attitude of surgeons toward physicians in smaller cities and country districts, when the struggle for existence is the prime factor is not as charitable as it should be, and when we remember, though we are all good fellows, that in many men the hog principle is not yet all rooted out, this attitude coupled with the trend to cut often works infinite mischief to the physician and to his patient. Again, in these districts outside the large surgical centers where honest and competent surgeons can be had without the drawbacks above mentioned the population are not trained to accept surgical interference when needed. In places where good surgeons are not to be had, if I had appendicitis I would rather trust a good physician than a bungling incompetent surgeon, for in the former case I might recover, in the latter I must surely die. Were we less fallible and more honorable than we are, we would always do the proper thing, but until then we shall have the same troubles which now beset us. So in appendicitis, as well as in other diseases, we are often controlled by circumstances, and under such circumstances we can do only what we honestly and conscientiously believe to be right. If we do this our patients have little to fear.

Dr. ELMER LEE, New York—I recommend the reading of the paper at your homes, because the answers to the questions raised by the gentlemen who have spoken will be found there. I stand before you to plead for the lives of the patients, and in so doing it is my experience after seventeen years of medical practice, that many lives are in jeopardy through the mistakes of the doctor or of the surgeon or of both. I am not an exclusive. I believe the methodical work of the physician is to be considered foremost because he is the one to see the patients first. If the physician did his whole duty in the incipiency of the case few cases would go to the surgeon. Recently a child, in Boston, was taken sick with pain in the abdomen. The doctor administered opium in the night. The next day the doctor came again and gave a purge. The next day he came and continued the treatment. The next day he came and the child was considerably worse for the treatment. A surgeon was called—about four or five days after the beginning—and an operation was decided to be necessary. The child was operated upon and died. He had been a healthy vigorous boy, but he ate too much candy and food and took but little exercise. The condition which produced the fatal termination I am sure could have been cured by the intelligent application of the lines laid down in the paper. When I find that I am mistaken in my views I will be happy to come to you and acknowledge my mistakes. The physician does not stand equal with the surgeon in these modern days, and a stigma rests upon the medical profession. I am trying to overcome it, and it seems to me it can be overcome. It appears to me that it is within the range of medical treatment to manage the vast majority of inflammations of the abdominal viscera.

I have not paid much attention to statistics. I plead derelict in coming before you without mechanical statistics. I do not know much about them. If patients do not die that is all sufficient for me. I can not tell if perityphilitis, appendicitis or colitis exists; it is impossible for a physician to verify what was a diagnosis of appendicitis; that is only possible for the surgeon who has a mechanical result; it can not be done in medicine. It is only my opinion that those cases treated by me have been cases of appendicitis; it may involve the colon or the cecum. I do not know how to make an absolute diagnosis; it may be done in this country and in Europe.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT, IN RECOGNITION OF THEIR LABORS IN THE SURGERY OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.

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CHICAGO, ILL.

The structures involved in the repair of a defective perineum are muscles and fasciæ. The operative procedure consists in denudation with coaptation or flap-splitting methods. Notwithstanding the successful claims in the varied surgical methods of colpoperineorrhaphy the anatomical basis is neither generally nor perfectly understood. It is probable, however, that the essential success lies in the reunion of the separated levator ani muscle by means of its fasciæ superior and inferior with some other fasciæ, and also that this success has been chiefly due to deep suturing. The object of this essay is to demonstrate that the chief factor in successful colpoperineorrhaphy is the restoration by the aid of deep sutures of the fasciæ, especially the levator ani fasciæ, superior and inferior.

The muscles of the pelvic floor may be divided into two classes: *a*, the deep layer—the levator ani coccygeus and pyriformis; *b*, the superficial layer—the transverse perinei, bulbo-cavernosus and sphincter ani externus. A peculiar characteristic of the muscles of the pelvic floor, and one which demands respect in colpoperineorrhaphy, is the extensive fascial attachments of one or both ends of the muscles. The levator ani, the bulbo-cavernsous and the transversus perinei have a fascial attachment. We will consider in detail the muscles and fasciæ involved in colpoperineorrhaphy. The basis of this labor is a careful anatomic investigation with considerable clinic and surgical experience.

THE LEVATOR ANI MUSCLE.

The levator ani muscle is perhaps the most difficult to understand as regards its form, insertion and function. The origin of the muscle is sufficiently plain, and is considered established by anatomists. Few agree as to exact insertion, even at this late day, and opinions vary as to the exact function, form and insertion of this muscle. My own investigations demonstrate that there is a foundation for these varied opinions.

1. The insertion and origin of the levator ani vary as to the extent of distinct muscular loops which embrace the rectum and vagina, as to the tendinous raphæ (between muscle loops and distal ends of the coccyx), also regarding the precise relation to the vaginal wall, whether muscular or connective tissue, and also as regards the exact relations to the muscle of the lower end of the rectal wall. Moreover, its partial fascial origin and insertion is sure to endow the extremities with varying appearances as to the length of the fascial or tendinous conditions; in other words the distance of the red muscular fibers from the extreme origin and insertion of the levator ani vary. Perhaps this variation in insertion may be explained by considering the levator ani as a rudimentary muscle and to be disappearing with the tail. Its double fascial accompaniments complicate its origin and insertion, as well as the interpretation of its function.

2. The various opinions as to the form of the levator ani are explained by differences as regards sex idiosyncrasies of individuals, disturbances from gestation and parturition, variation of the shape of the pelvis and fascial insertions and attachments.

3. The different views as to the function of the levator ani lie in confusing its function with the levator ani fascia, superior and inferior, in exaggerating its size and attributing to it function and utility belonging to other genital supports. It is especially erroneously inferred that a muscle will act as a continuous tensionized support for any viscus. The knowledge of the levator ani muscle is fragmentary and difficult of access. Its dissection is far from easy and its adjacent relations are complicated. The muscle does not resemble a funnel with the rectum or vagina at the bottom or apex, but is more similar to a sling, a flat loop or a horseshoe, which does not pull the rectum or vagina directly upward, but draws the two canals forward and upward toward the pubic cord.

The muscular loop of the levator ani muscle resembles a horse's collar encircling the rectum or the vagina. In the female it vigorously controls two

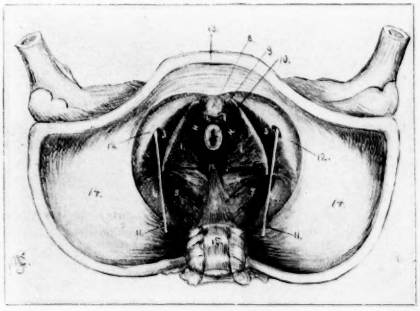


Fig. 1.—(Robinson-Scholer.) This cut is drawn from a female pelvis dissected by the author and intended to show the muscular floor of the pelvis with fascia dissected off. 1, 1, the levator ani muscle; 2, 2, the white line or origin of the levator ani; 3, 3, the obturator internus muscle; 4, 4, the coccygeus muscle; 5, 5, the pyriformis muscle; 6, 6, the inner wall of pelvis; 7, 7, sacrum; H, H, the horse-shoe loop of the levator ani muscle, drawn darker; 8, the V-shaped urethra; 9, the vagina, cut close to the pelvic floor, whose wall does not flare like the radial wall, 10; 11, 11, the obturator nerves; 12, 12, inner wall of pelvis; 13, pubic crest; 14, 14, iliac fossa; 15, last (5th) lumbar vertebra.

canals—rectum and vagina—yet its control of the vagina depends on that of the rectum. The rectum being forced forward against the middle of the posterior vaginal wall produces the H-shape to the vagina. The excess of vaginal wall is compelled to fold at the sides producing the upright columns of the H. It is very thin. In an excellent specimen which I dissected from a good-sized woman the levator ani muscle is so thin as to be really membranous, and the muscular band between the vagina and rectum is but a few lines in thicknes. It is really a pelvic diaphragm. The muscle should be considered as to its origin, course and insertion.

Origin.—The levator ani muscle arises: from bone, from the posterior surface of the pubis and ischial spine; or from fascia, arcus tendineus and vesico-pubic ligament. The bony origin is the posterior surface of the pubic bone and ischial spine. The larger portion of the levator ani of bony origin arises

from the posterior surface of the pubis. It begins about half an inch from the symphysis and one and one-half to two inches below the pubic crest. This point of origin is about two fingers wide or one and one-half inches, and does not meet its fellow of the opposite side, one-half to one inch existing between them on the posterior surface of the pubis, which is filled in by the obturator fascia. The bundle of muscles originating on the posterior surface of the pubis passes downward and backward to embrace the vagina and rectum. This is the pubic sling or horseshoe loop, which is quite thick and strong in some cases, and very thin and membranous in others. The margin of the loop, which is applied against the sides of the vagina and rectum, is often the thickest part of the muscle. The muscular bundles of the horseshoe loop join those of the opposite side of the levator ani posterior to the vagina and rectum without an intervening perineal tendon or raphe. In some dissections it is absolutely plain that no tendinous raphe exists, while in others it can not be told.

The smaller portion of the levator ani of bony origin is from the ischial spine immediately anterior to the origin of the coccygeus muscle. Quite a distinct strip one-fourth to one-half inch wide comes from the

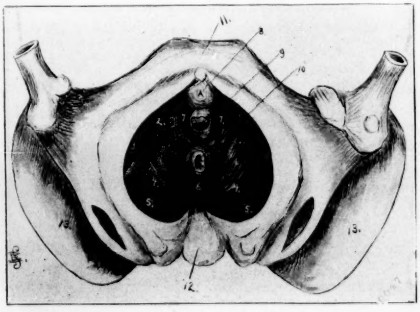


Fig. 2.—(Robinson-Scholer.) This is a cut drawn from a female pelvis dissected by the author. It illustrates the inferior surface of the pelvic floor. On the left side (in the fig.) the levator ani fascia inferior is not dissected off, while it is on the right side, showing the inferior surface of the levator ani muscle. 1, 1, shows the levator ani muscle with its parallel bundles; 2, the levator ani fascia inferior; 3, 3, the obturator internus muscle; 4, 4, the coccygeus muscle; 5, 5, the gluteus maximus; 6, ano-coccygeal structure; 7, 7, the horse-shoe loop of the levator ani, showing some muscular bundles coursing between rectum and vagina. It is not so large on the inferior surface as it is on the superior surface of the pelvic floor. 8, urethra; 9, vagina; 10, anus flaring; 11, pubic arch; 12, sacrum; 13, flaring ilium.

ischial spine, and can be plainly followed by the eye to the horseshoe loop.

The ligamentous origin is from the anterior ligament of the bladder (ligamentum pubo-vesicale) and from the arcus tendineus (white line). The fibers of the levator ani which arise from the ligamentum pubo-vesicale are of little practical importance. The white line extends in a slightly curved direction from the posterior lateral surface of the pubis, over the obturator foramen to the spine of the ischium. The anterior end lies two and three-fourths inches below the ileo-pectineal line, with a length of about four inches. The white line (arcus tendineus) is a part or an extension of the anterior true ligament of the bladder, a thickening of the levator ani fascia superior. In the white line, the muscular fibers arise as fine tendinous bands, and may show their reddish muscular nature at the white line or a short distance from it. The muscle may shade into a flat tendinous layer before it reaches the white line. The proximal tendon of the levator ani muscle varies much as to its relations with the white line. It may arise below it as well as from it. The white line may project into the pelvis as a tendinous fold, and be capable of being separated from the origin of the muscle.

The course of the fibers of the horseshoe loop of the levator ani muscle is backward and downward in two fleshy bundles, the smaller to the side and posterior surface of the vagina, and the larger to the side and posterior wall of the rectum. The loops which pass along the sides of the vagina seem to be attached to the vaginal walls by connective tissue only, while the loops of muscular fibers which embrace the rectum interweave with the muscular bundles of the rectal wall, forming a strong connection. The part interwoven in the rectal wall acts as an elevator. It would appear that in some cases the

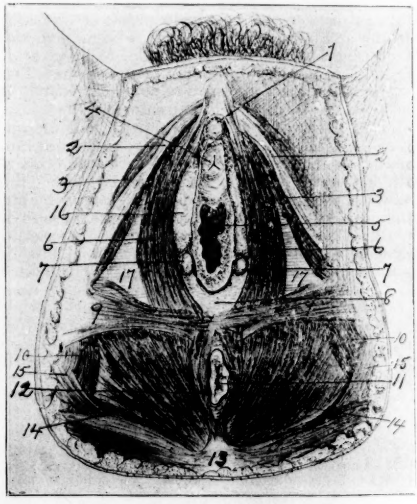


Fig. 3.—(Author.) This figure I drew semi-diagramatically to illustrate the general view of the pelvic outlet. 1, clitoris; 2, crura clitoridis; 3, erecto clitoridis muscle; 4, urethra; 5, orifice of vagina; 6, bulbo-cavernosus muscle; 7, vulvo-vaginal glands (of Duverny, of Barthalin, of Tiedeman); 8, posterior vaginal commissure; 9, transversus perinei muscles; 10, obturator internus muscle; 11, anus; 12, sphincter ani externus; 13, coccyx; 14, levator ani muscle; 15, great sacrosciatic ligament; 16, the bulb of the vagina; 17, deep layer of superficial perineal fascia.

loops of the levator ani interweave with the muscular fibers in the wall of the vagina. The part of the levator ani which passes between the vagina and rectum, is a small, thin band, one-sixth to one-eighth of an inch in width, which arises from the external part of the pubic origin and passes over the large belly of the muscle to gain their rectovaginal situation. Its relations to the wall of the vagina are very close if not interwoven with its fibers.

The part of the muscle of fascial origin which arises from the white line, passes backward and downward, becoming part of the levator loop and partly inserted in the tendinous perineal raphe and the last bone of the coccyx. Many of these fibers pass

downward in a curve, and when near the median raphe they turn acutely backward to become inserted into the coccyx. A few of the muscular fibers arising from the white line, as well as from the horseshoe-shaped loop, together with some from the ischial spine, embrace the rectum. The part of the levator ani arising from the ischial spine becomes inserted chiefly in the coccyx. Yet one may observe one-fourth of an inch in width pass around the rectum with no intervening tendinous raphe.

The part of the levator ani muscle of special interest to the gynecologist is the two-fingers wide, horseshoe-shaped sling which arises from the posterior surface of the pubis and passes backward and downward to embrace both rectum and vagina. It is the belly of this loop which gives the rectum its forward curve just before the anal end is turned backward. It is the sphincter portion of the muscle. It is this part of the muscle which becomes hypertrophied in vaginismus. It is the portion of the muscle torn and separated in lacerated perineum. It is the

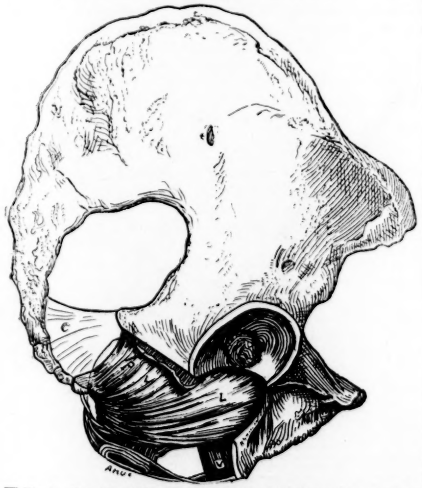


Fig. 4.—(Luschka, 1864.) Redrawn and modified represents a view of the levator ani muscle. L, L, the modification of Luschka's figure consists in magnifying the rectal curve made by the levator ani muscle; C, is a continuation of the levator ani muscle backward, drawn lightly; V, vagina. The grip on the rectum by the horse-shoe sling of the levator is here plain. The levator ani fascia inferior, p, is shown rolled up.

portion of the muscle which retards labor, creates vaginal spasms and may prevent coition, and in rare cases prevents the penis from escaping until relaxed by an anesthetic. In most cases the levator ani behind the rectum may be divided into three quite distinct parts, viz., *a*, the part which is connected to the last bone and fascia of the coccyx. The fibers accompanying this portion of the muscle originate chiefly from the posterior end of the white line or at the ischial spine. *b*. A portion of the muscle forms a median tendinous raphe for about one-third of an inch immediately in front of the coccyx. *c*. The portion of the muscle immediately behind the anus, about three-fourths of an inch wide, has no intervening tendinous raphe (not always distinct) and consists of the belly of the loops which originate and insert on the posterior pubic surface. In other words, the muscular fibers of each side anastamose, forming the horseshoe-shaped loop, with no intervening tendinous raphe. Some of the loops intertwine with those of the sphincter ani, which pass back to the tip of the coccyx, also some of the muscular fibers of the sphincter ani externus are continuous with the loops of the levator ani. The fibers of the levator ani originating from the white line pass backward and downward, but on arriving at the median raphe, many of the fibers turn sharply backward to be inserted into the coccyx, and soon become tendinous. The levator ani fascia superior is not very intimately attached to the muscle, and may be compared to the fascia transversalis. The levator ani fascia inferor is adherent to the muscle.

Deductions in regard to the levator ani muscle may be numerous. Certain practical considerations may be drawn from a careful study by dissection and in gynecologic practice. As it was originally a muscle of the tail it is becoming vestigeal in man, shown by its fascial connections. From the origin, course and insertion of the levator ani muscle, it must be viewed as the all-important muscle of the pelvic floor.

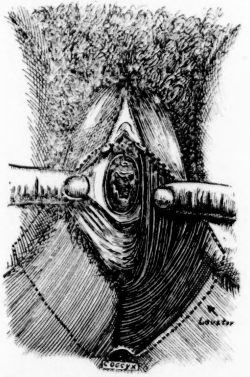


Fig. 5.—(Dickinson, 1889.) The levator ani as seen through the skin; the outlet of the pelvis is dotted and the direction and course of the chief muscular bundles of the levator ani marked out.

The levator ani fascia superior is the real visceral support. I think it was Dr. Meyers, a German physician, who first happily named it the pelvic diaphragm. In many subjects it is membranous. The normal muscle has the shape of a boat, and when this boat shape becomes cone-shaped, the pelvic floor is impaired. The levator ani is composed of many muscular bundles coursing chiefly parallel to each other, but also at varying distances. The bundles are flat, ribbon-like, and of a bright red color. The bundles of muscular fibers are held at greater or less distance from one another by collections of fat or connective tissue in varying degrees. Fenestra or apertures are commonly observed between the muscular loops. The capacity of the bundles of the levator ani muscle to separate and reunite without injury, serves a useful purpose in labor, when rapid and wide distension of the pelvic floor may occur. Too many figures illustrate the muscle as a distinct plane with no parallel gaps between the bundles.

The levator ani (the deep muscular layer of the

pelvis) is connected to the external sphincter ani of the rectum and vagina (the superficial muscular layer of the pelvis) and by this muscular connection to the perineal body (the punctum fixum), the deep and superficial muscular layers of the pelvis are brought into intimate relations of much utility. A few fibers are lost in the perineal body. The levator ani is in closer organic relation with the rectum than the vagina, because the rectum requires more frequent and perfect evacuations than the vagina. It is chiefly a sphincter muscle. The weakness of its origin, insertion and direction of its fibers is in accordance with its fading out of existence.

The forward curve of the rectum is due to the horseshoe-shaped loop of the levator ani, which originates chiefly from the posterior surface of the pubis. By the contraction of the lower, stronger fibers of the levator, the lower portion of the rectum is forced against the perineal body, which compels the anus to turn backward and to evacuate its contents.

The levator ani, on account of its shape and size leaves deficiencies in the pelvic floor, which are filled in front by the bulbo-cavernosus and behind by the coccygeus muscles, its continuation backward.

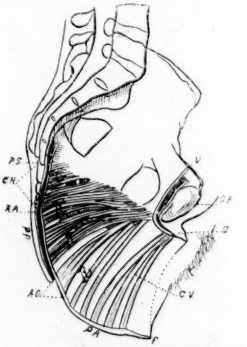


Fig. 6.—(Varnier, after Dickinson.) The distended levator ani. V, bladder; s, p, symphysis; c, clitoris; c, v, constrictor of the vulva; F, fourchette; P, A, anterior perineum; A, O, anus; P, P, posterior perineum; C, R, coccyx; P, S, point of sacrum; R, R, R, is on the muscle with its separated bundles, the middle R is on the strongest bundle. In this figure we observe how the muscle can save itself from rupture by the separation of its various fasciculi. It yields better than if it were in one connected sheath.

The palpable rounded edge of the levator ani lies three-quarters of an inch above the anus and three-quarters of an inch above the vaginal opening, making the muscle, in fact, a regulator of the external openings of these two canals. Normally the orifices of the canals are always closed. They remain open only by internal or external force or from trauma.

The levator ani will lift from five to twenty pounds, averaging about ten as noted by Dickinson. Its strength soon tires out assistants in vaginal hysterectomy. From its insertion into the perineal body the external sphincter, post-rectal raphe and coccyx, it draws forward the post-vaginal structures of the pelvic floor. In the excellent work of Savage, he names the portion, from the principal bony origin, pubo-coccygeus. This is erroneous, as these loops do not pass as far back as the coccyx—do not even come in contact with it. The levator lifts the rectum and vagina forward and upward to the pubic arch. The muscle has but limited influence on the sides of the rectum. The muscular fibers composing the horseshoe loop exercise the chief influence over the rectum, while the portion of the muscle arising from the white line (fascia) serves its purpose by holding the pelvic diaphragm in relation prepared for any immediate action, with its superior and inferior fascia it makes a tense floor for the superimposed viscera.

The levator ani fascia superior and inferior lends the muscle its greatest utility by increasing its strength and also producing harmonious action in its function. The horseshoe sling is inseparably blended with the sphincter ani externus. The levator ani produces the H-shaped condition of the vagina and its puckered or constricted appearance at the orifice. The muscle becomes hypertrophied during pregnancy and vaginismus. It resists the head in labor to a surprising degree. It may be easily observed in slow labor, when, if small forceps sufficient to overcome the tension of the muscle be applied, labor proceeds rapidly.

The comparison of the diaphragm and levator ani, as to the capacity for strength, is in favor of the levator ani. Its strength varies much in different sub-

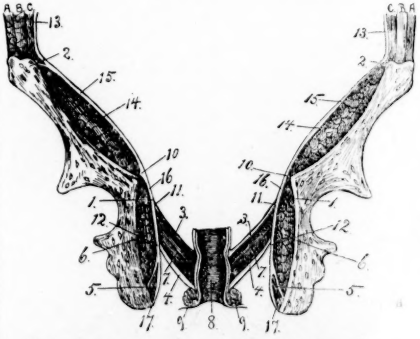


Fig. 7.—(Robinson-Scholer.) A diagram to illustrate the pelvic fascia, with a new nomenclature of same. 1, 1, white line; 2, 2, origin of transversalis and iliac fascia at the iliac crest; 3, 3, levator ani fascia superior; 4, 4, levator ani fascia inferior; 5, 5, Alcock's canal; 6, 6, obturator internus muscle; 7, 7, levator ani muscle; 8, vagina or rectum; 9, external sphincter; 10, 10, ileopectineal line; 11, 11, origin of levator ani fascia superior; 12, 12, beginning of obturator fascia inferior; 13, 13, transversalis fascia; 14, 14, iliac muscle; 15, 15, iliac fascia; 16, 16, obturator fascia superior; 17, 17, ending of obturator fascia inferior on the ischial tuberosity.

jects. The best descriptions of the levator ani muscle are given by Henle, Luschka, Testut and Lesshaft. Hart and Dickinson have made excellent studies on this muscle. Browning wrote an interesting article on the subject. The levator ani may be a rudimentary muscle, disappearing with the tail and in the evolutionary process of an erect attitude. This view may arise from the weakness of its origin, the direction of its fibers and insertion, as well as the requirement of the double fasciæ. It is unphysiologic for a muscle to produce constant support, hence the levator ani can not be considered a support for the viscera; it is rather a sphincter muscle.

The levator ani muscle is analogous to the buccinator muscle. Perhaps from an evolutionary standpoint we may look on the levator ani as having three functions, viz.: *a*, of a sphincter; *b*, of an elevator; and *c*, of a tensor of the levator ani fascia, superior and inferior.

As proof that the levator ani is a sphincter, one

need only introduce the finger into the vagina and request the subject to contract the muscle. Cruveilhier, Henle, Lesshaft and Budge insist that the levator ani is a sphincter of the anus and lower rectum chiefly, and not an elevator. That this muscle is an elevator one need only dissect it to find the muscle ending definitely in the walls of the rectum, and such terminating fibers, when in action, could only elevate the rectum. The horse in defecation illustrates that the levator ani is an elevator, as the rectal wall is elevated, the rectal mucosa everted and completely evacuated. As an elevator, it resists intra-abdominal pressure.

The levator ani appears as well developed in the male as the female, and hence labor does not appear to develop it. The levator ani muscle is greater in those animals with a tail, and originally its chief function was to aid in managing the tail, from which it would appear that as a tensor of the levator ani fascia superior and inferior, these fibers take an active part. They originate at a definite fixed point, lose themselves between the fascial blades and do not reach rectal or vaginal walls. When a muscular fiber neither goes to the rectum nor ends in its wall, it will not act as a sphincter, nor as an elevator.

Lesshaft and Roux divide the levator ani into two layers, viz., *a*, the inner layer, which is an elevator, and *b*, the outer layer, which is a sphincter.

THE INTERNAL PELVIC FASCIA.

The internal fascia of the lesser pelvis has a poor literature, and is not often described. As the pelvic fascia has much to do with the permanent results of the flap or any perineal operation, I will write of it somewhat in detail.

The fascia of the greater pelvis, or that fascia lying superior to the ileopectineal line, is not here considered. The fasciæ, the planes of strong, fibrous tissue here under consideration, lie below the ileopectineal line.

As a teacher of anatomy, I have always maintained that a fascia should be named according to the muscle or other structure with which it is in the most intimate relation. I shall therefore apply this simple nomenclature to the fascia in the pelvis.

The fascia covering the obturator internus muscle will be termed the obturator fascia. As this fascia is divided by the white line extending from the posterior surface of the pubis to the ischial spine, we will call that portion of the fascia above the white line, the obturator fascia superior, and that portion of the fascia below the white line, the obturator fascia inferior. The fascia above the levator ani, originally named by Tyrrell the rectovesicale, and by Carcassone the pelvic aponeurosis, by others the vesical layer of the pelvic fascia, we will name the levator ani fascia superior, and that part of the fascia below the levator ani, the levator ani fascia inferior. The fascia covering the coccygeal and pyriformis muscles will be named after those muscles. The fascia covering the sacrum very naturally takes the name of the sacral fascia. The internal fascia of the lesser pelvis extends from the iliopectineal line on either side to the median raphe of the pelvic floor. It not only lines the pelvic walls and floor, but enters into intimate relations with the pelvic viscera. It is a strong, shiny, fibrous membrane, possessing a very varying quantity and quality. In a certain sense the fascia of the lesser pelvis should be treated as an independent structure, and not as a continuation of the iliac transversalis or other fasciæ. The ileopectineal line marks an absolute division between the iliac and obturator fascia.

The simplest plan is to describe the obturator fascia superior and inferior and to consider the obturator fascia as distinctly belonging to the obturator (internus) muscle, subsequently to consider the fascia of the levator ani superior and inferior, with a lesser consideration of the coccygeus pyriformis and sacral fasciæ. The fasciæ lining the lesser pelvis are intimately connected with their respective associated muscles and structures by strong connective tissue. The connection of the fasciæ with the peritoneum is not intimate, a thick, loose layer of connective tissue, richly laden with fat lobules, lies between the peritoneum and the fasciæ lining the lesser pelvis. This loose connection of pelvic peritoneum and pelvic fasciæ allows the easy and rapid spread of pelvic abscesses between the pelvic fasciæ and the peritoneum in the subperitoneal tissue.

The obturator internus fascia surrounds the obturator muscle at its origin, from the lateral pelvic surface of the innominate bone, and is the special fascia of the obturator internus muscle. It is attached for a considerable distance to the iliac portions of the

Fig. 8.—(Ranney.) Diagram of the fascia of the pelvic floor in a mesial section. It illustrates the levator ani fascia superior and inferior above and below the levator ani muscle. T. L. triangular ligament; P. F. two layers of superficial perineal fascia. Observe that in the anterior triangular perineal space there are five layers of fasciæ, viz.: 1, superficial layer of perineal fascia; 2, deep layer of superficial perineal fascia; 3, triangular ligament, outer layer; 4, triangular ligament, inner layer; 5, levator ani fascia superior. In the posterior perineal space there are two layers of fascia—the levator ani fascia superior and the levator ani fascia inferior.

brim. At this point the obturator becomes attached to the upper border of the obturator membrane. In front, the attached line of the fascia passes below the ileopectineal line to allow the obturator vessels and the nerve to enter the obturator foramen or canal. This portion is fixed to the periosteum and appears as an independent organ. In front it is attached to the body of the pubis and along the upper margin of the obturator foramen by an oblique line, to a point about one-half an inch below the symphysis. Where the fascia dips under to allow the passage of the obturator vessels and nerves it is firmly attached to the periosteum and nerves by strong tendinous fibers. Posteriorly, it is attached to the anterior surface of the great sacrosciatic ligament and the anterior margin of the great sacrosciatic notch. Inferiorly, the fascia is attached to the margin of the obturator foramen of the descending ramus of the pubis, and it joins the falciform process of the great sacrosciatic ligament, which firmly connects it to the inner border of the ischium and its ascending ramus.

With a firm insertion in the ileopectineal line, the

anterior border of the great sacrosciatic foramen, the anterior and inferior margin of the obturator foramen and to the edge of the falciform process of the great sacrosciatic ligament, the obturator fascia becomes a fixed, strong, thick, fibrous membrane, in relation superiorly with the obturator nerve and vessels and inferiorly with the internal pudic vessels and nerves —Alcock's canal. It has intimate attachments to the obturator internus muscle above, but is quite loose below.

The obturator fascia we divide into two portions, superior and inferior. The obturator fascia superior is that portion above the white line or arcus tendineus. It looks into the pelvic cavity from the lateral aspect and is covered by peritoneum. The peritoneum and obturator fascia superior are separated by considerable loose, fatless, snow-white connective tissue, composed of many shiny, thin, cleavable planes, which become easily dissected by progress of the pelvic abscesses.

The structures of importance which pass over the internal face of the obturator fascia superior just below the iliopectineal line are the obturator vessels and nerves. These structures are liable to be injured by the head soon after its engagement by the brim or fixed bony ring of the pelvis. The obturator fascia superior has a surface of about ten square inches.

The obturator fascia inferior is that portion below the arcus tendineus or white line. It looks internally into the ischiorectal fossa and externally toward the obturator internus muscle. It forms the external boundary of the ischiorectal fossa. At the lower part of the ischiorectal fossa about an inch above the tuberosity of the ischium the obturator fascia planes become separated, producing a sheath — Alcock's Canal — for the transmission of the pubic vessels and nerves. The obturator fascia inferior, has a surface of some five square inches, one-half the size of the obturator fascia superior.

At the lesser sciatic notch, the obturator fascia passes out of the pelvis with the muscles and gains the postero-femoral regions of the thigh. The obturator fascia is inserted into the ramus of the ischium and pubis, where it passes on and blends with the triangular ligament of the urethra, hence the triangular ligament is a continuation of the obturator fascia from each side.

The arcus tendineus or white line appears as an aggregation of tendinous fibers of the obturator fascia. It extends from the posterior surface of the pubis to the spine of the ischium. It possesses a gentle curve with its concavity upward. The white line gives origin to that part of the levator ani muscle, which arises between the lower posterior surface of the pubis and ischial spine. The white line arises out of the ligaments of the bladder; a thickened portion of the obturator fascia is the line of origin of two planes of fasciæ. The upper plane I call the levator ani fascia superior, and the lower plane the levator ani fascia inferior. The white line varies in thickness in individuals—generally is one-sixth of an inch in thickness in the middle, but its greatest strength and width is at the anterior end, where it assumes intimate relations with the pubovesical ligaments. In women the white line is about four inches long. Its origin at the pubis may be chiefly from the anterior and lateral (true) ligaments of the bladder. The white line allows considerable elasticity. It is quite firmly fixed at the anterior end, and definitely at the posterior end, but, like a long, tight rope, allows considerable range of motion and sagging in the middle.

The levator ani fascia superior (rectovesical fascia of Tyrell, rectovesical aponeurosis of Carassone or visceral layer of the pelvic fascia) arises from the white line and passing inward forms the floor of the pelvis. The levator ani fascia superior, as its name implies, covers the superior surface of the levator ani muscle. The fascia finally loses itself in the median raphe behind the rectum in the rectal, vaginal and vesical walls, and in the anterior and lateral ligaments of the bladder. From this relation, the levator ani fascia superior becomes of significant interest in perineorrhaphy. Anteriorly it is remarkably strong and short, being attached to the back of the pubis above the obturator fascia, from which it is separated by the origin of the levator ani muscle; the levator ani fascia superior, the levator ani muscle and the obturator fascia being all three closely adherent to the pubis bone and to each other.

If one carefully removes the peritoneum and loose subperitoneal tissue the levator ani fascia superior may be plainly seen stretching from the white line to the bladder, vagina and rectum. It may be stripped off the levator ani muscle in several thin, cleavable planes. It is reflected on the bladder forming the anterior true and lateral true ligament of the bladder, however the lateral ligaments of the bladder may be assisted by ligaments from the vagina. The levator ani fascia superior begins its anterior attachments at the lower border of the symphysis, continues then along the white line laterally to the ischial spine, continues from the ischial spine on the superior surface of the levator ani muscle to the median raphe. The levator ani fascia superior covers an area of about six square inches on each side of the median line of the pelvis.

The levator ani fascia superior may be divided into the anterior or vesical portion, the vaginal portion and the rectal portion.

The vesical portion of the levator ani fascia superior is reflected from the pubis to the neck of the bladder, forming the anterior true ligaments of the bladder and part of the lateral ligaments. The vesical portion is very thick and strong, even tendinous. It is reflected from the pubis in an arched manner. The vaginal portion of the levator ani fascia superior is analogous to that which surrounds the prostate in the male. In the male, the prostate gland and vesiculæ seminales are surrounded by a strong capsule derived from levator ani fascia superior. This portion of fascia surrounds the vagina in the female, including the large venous plexuses.

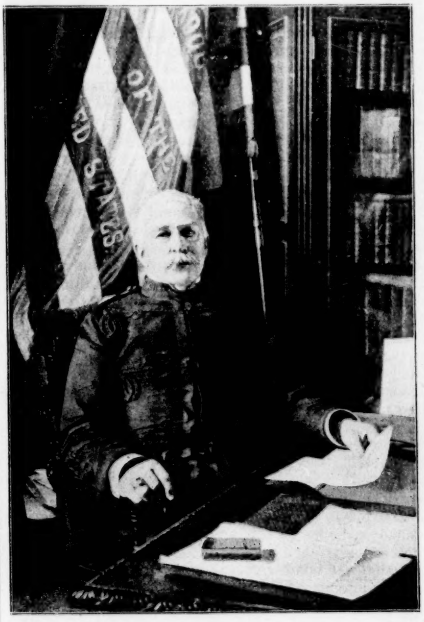
(To be continued.)

THE INVASION OF PORTO RICO FROM A MEDICAL STANDPOINT.

BY N. SENN, LIEUT.-COL. U. S. V.
CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

The occupation of Cuba and the Philippine Islands by our conquering navy and army in such rapid succession seemed to increase the desire of conquest and opportunities to test the strength of our arms. With the destruction of the weak navy of our enemy there was nothing in the way of sending troops to any of the many Spanish possessions. The fall of the heroic Cervera and his faithful little band, off the harbor of Santiago, before the murderous fire of our well-

equipped fleet cleared the pathways of the ocean of further sources of danger. It was but natural that the beautiful island of Porto Rico, one of Spain's most valuable possessions, should have been selected by the military authorities as the next objective point for contention. Repeated attacks by our navy on its best stronghold, San Juan, had failed to bring about surrender and to gain a foothold on Porto Rican soil. So far the navy had taken the lead in bringing Spain to terms and the army was anxious to do its share in wresting from its greedy grasp another enslaved people. Major-General Miles, who conducted the invasion in person, decided to march upon San Juan from several directions, and, after uniting the forces, attack the city jointly. The experience gained in Cuba had taught us an important lesson in conducting the Porto Rican campaign. General Miles laid his plans wisely and with special reference to gain the desired object with as little suffering and loss of life as possible. Every movement in this campaign was made with a due regard for the welfare and success of our troops rather than a desire for personal gain and aggrandizement, which characterized the Cuban campaign, as every one knows. He was well aware of the depressing effects of the tropical climate on the unseasoned troops and of the necessity of resorting to timely and efficient precautions in preventing disease. From experience and personal observations, he recognized the fact that the unavoidable privations incident to warfare are multiplied many times when the seat of war is a strange and remote country presenting a climate and environments unaccustomed to by the invading force. His actions were clean-cut admissions that he was in need of a medical adviser and that they were influenced by the frequent consultations held with his chief surgeon. The war in Porto Rico was conducted upon the most humane principles, and although no great battles were fought, victory upon victory followed the footsteps of our army and in less than three weeks our flag floated over three of the largest cities of the island. Our troops love and respect their leader and have followed him without fear and grumbling under the scorching sun, full of confidence and trust. The news that peace had been declared reached the headquarters at Ponce, August 14, and the troops are now resting on their arms awaiting the final adjustment of the terms of peace. Eager to fight, yet every soldier in the field received this message of peace with joy and enthusiasm, fully satisfied that the army had done justice to the flag and country it represents. Col. Charles R. Greenleaf, chief surgeon of the army in the field, accompanied General Miles on his trip from Guantanamo to Porto Rico, and has been with the army ever since. He was long enough in Cuba to gain a full insight into the horrors created by infectious diseases, which so constantly follow large armies, especially in a war of invasion. He was amazed when he saw to what extent yellow fever had broken out in the few weeks the troops had been in Cuba. There was no difficulty in tracing the disease to a total lack of precaution on the part of the general in command. Col. Greenleaf had given his directions and advice before the army left Tampa, but they were not heeded. Owing to want of co-operation on part of General Shafter, the medical officers found themselves powerless in preventing and combating the dreaded disease. Col. Greenleaf's prompt and energetic action on his arrival in Cuba did much in repressing this disease, but it was too late too guard against a general outbreak. The many recent graves in Cuba containing the remains of the victims of this disease are the best proof of what will happen when the leader of an army ignores the health and comfort of his men. In planning the Porto Rican invasion, General Miles availed himself of the invaluable services of his chief surgeon. The expedition was well supplied with medicines, hospital stores and medical officers to meet all possible emergencies. The result has been that the army has been so far singularly exempt from disease, with the exception of typhoid fever and the effects of heat, both beyond the control of the medical officers. Since his arrival in Ponce, Col. Greenleaf has been



General Nelson A. Miles, in command of the Army in Porto Rico. By courtesy of "McClure's Magazine." Copyrighted 1898 by S. S. McClure Co.

the busiest man in the army. He has not been content in simply issuing his orders from headquarters, but he has attended in person to the execution of every detail. He has visited the camps and the hospitals and exercised personal oversight over the distribution of hospital supplies, instruments and medicines. Anxious to serve the sick and wounded, impatient when face to face with a slow, hesitating subordinate, he has more than once performed temporarily the duties of an ordinary hospital steward, to furnish a much-needed object-lesson. His work will justify the confidence reposed in him when he was appointed to the high and responsible position he holds during this war.

FIRST SKIRMISH.

General Miles landed with his expedition, which included a number of war vessels, at Guanica, Monday,

July 25. The harbor was entered by the now famous little gunboat *Gloucester*, under the command of Lieut.-Commander Wainwright. A landing was effected by thirty sailors, the Spanish flag was hauled down, and the stars and stripes raised amid the cheers of the sailors, who knew well that what they had just witnessed meant liberty and freedom for the down-trodden people of the island of which they had just taken possession.

The planting of the flag and the deafening cheers which rechoed from the hills of the liberated island were followed by a volley from the hidden enemy, which was promptly responded to by the guns of the *Gloucester* and a Colt rapid fire gun, which had been taken ashore. The Spaniards fled in confusion and sought shelter among the adjacent hills leaving four killed on the field, while our soldiers escaped without a scratch. The turn of the infantry came soon after landing, in the form of a lively skirmish, in which we lost one killed and fifteen wounded, of whom one died a day or two later. Most of the injuries were flesh wounds, which healed in a remarkably short time. A very interesting incident occurred during this skirmish. The day was hot, and our troops had to ascend a steep hill, from the crest of which the Spaniards defended themselves. One of the volunteer soldiers, outrunning his comrades advanced far ahead of his line and when he nearly had reached the Spanish position was overcome by heat. He fell in a semi-conscious state. A Spanish doctor rushed to his aid with a stretcher and two hospital corps men, administered the necessary restoratives and had him conveyed at once within our line. This one act alone goes to show that the Spaniards have often been unjustly accused of being cruel and inhuman. This certainly has not been the case during the present war. From my own observations I am sure that they have respected the Red Cross. In fact, the Red Cross people of Porto Rico, composed largely of Spaniards, have shown the greatest activity and interest in their humane work during the entire campaign. If anything, they have rather been overzealous, judging from the number of insignia displayed and worn. It was a common thing to see men wear a white cap with an immense red cross on top, another one in front, besides the brassard.

Ponce was taken and occupied without any resistance whatever. The citizens received our soldiers with enthusiasm and manifestations of joy. General Miles was hailed as a long-looked-for friend rather than a conqueror. The next engagement occurred between Arroya and Guayama, between a small Spanish force in ambush and General Haines' brigade, and resulted in eleven wounded on our side. The only death following this skirmish was a soldier of the Third Illinois Infantry who was shot accidentally by an unknown man of the Fourth Pennsylvania regiment. The bullet caused an extensive non-penetrating injury of the chest, from the effects of which he died the next day. Such accidents have occurred too often during the present war, and to prevent repetition in the future this matter should be investigated, as was done in this instance, by the proper authorities. Among the injured was a man who was shot through the pelvis and another one the subject of a gunshot wound of the elbow joint, both of them doing well four days later when I examined the wounded in the brigade hospital at Guayama. The third skirmish took place between the advance column of General Wilson's division, on the march to San Juan, and a small Spanish force intrenched on the summit of a high and steep hill. Lieut. Haines, the son of General Haines, was the only one who was brought on board the *Relief* August 4. One of the wounded was operated on by Dr. Parkhill in an ambulance. The abdomen was torn open by a fragment of a shell, the intestines protruded and a resection had to be made of a loop for a tearing injury. It was reported that the patient rallied well from the immediate effects of the operation and that hopes were entertained of his recovery. Another engagement took place between the troops under command of General Schwan, on their way from Ponce to Mayaguez, and about 1000

Col. Charles R. Greenleaf, Chief Surgeon of the Army in the Field.

Spaniards ambushed four miles from the latter city. This fight resulted in two killed and eighteen wounded on our side. All of the wounded were brought on board the hospital ship *Relief*, which called at Mayaguez on her way to New York, August 15. Such is a brief account of the casualties sustained by our army during the Porto Rican campaign. The experience here coincided with that gained in Cuba, to the effect of confirming the humane nature of the modern weapon. The proportion of killed to wounded is even smaller than in the Cuban war, as well as the number of seriously injured. Thanks to more elaborate preparations for the campaign, the wounded received prompt and efficient attention. The suffer-

ing of the well, sick, and wounded can not be compared with what I saw in Cuba. War is a great educator, and should we again be called upon to invade a foreign country, we shall profit by the experience of the past.

TYPHOID FEVER IN PORTO RICO.

The native doctors in Ponce, Porto Rico, gave us the assurance that not a single case of yellow fever had been seen in that city for the last three years. We were informed that in San Juan isolated cases occur from time to time. Malaria is present in all of the valleys, more especially in and around Ponce. The large, pendulous abdomen, and the pale faces of the many little naked children in city and country, are the best witnesses in showing the prevalence of malarial intoxication.

Typhoid fever is endemic in certain localities, but at present Ponce is almost free from this disease. Having seen the destruction of life and the indescribable suffering caused by yellow fever in Cuba, Col. Greenleaf naturally turned his attention toward protecting our troops in Porto Rico against this scourge. The proximity of Porto Rico to Cuba, the many pos-

Fever patients in the court of the Spanish military hospital.

sible sources of infection, made such a course imperative. That this fear was not unfounded, and that the Chief Surgeon recognized the danger and made use of timely precautions are but shown by the contents of a letter addressed to the Adjutant-General, Headquarters of the Army, and Circular No. 1 issued before the army sailed from Guantanamo to Porto Rico, and a copy of the Quarantine Regulations formulated at the same time.

HEADQUARTERS OF THE ARMY,
ON BOARD U.S.S. "YALE," EN ROUTE TO PORTO RICO,
July 23, 1898.

To the Adjutant-General, Headquarters of the Army.

SIR:—I have the honor to submit the following recommendations for preventing as far as possible the introduction of yellow fever into the command now about to land on the island of Porto Rico:

The assignment of an officer of rank, to be placed in command of the base of supplies, with authority to indicate the sites to be occupied by the various supply depots and the hospital, and to enforce the regulations governing the health of the attachés of these departments and the persons who may visit them on business.

The assignment of a sanitary inspector whose duty it shall be to examine all vessels and persons arriving at our base from seaward ports, and to prepare sanitary regulations for the Government of all transportation and persons arriving and departing from the station by land. This officer should have authority to quarantine all suspicious persons and means of transportation, and to disinfect their belongings, either by fire or such other means as may be deemed necessary.

All persons connected with the Army are forbidden to enter any building whatever on the island without express authority from these headquarters, and all buildings in rural districts that may be suspected of harboring the germs of disease should be destroyed by fire or otherwise thoroughly disinfected.

As woven goods, particularly those of woolen fabric, are special carriers of disease, the purchase or acceptance of articles of this kind from stores or inhabitants of the island is strictly forbidden. Any such property found within the lines will be at once destroyed and the holder subjected to punishment.

That commanders of regiments be instructed to prepare their camping grounds with great care and maintain a rigid police in them; under no circumstances shall they camp on ground that has previously been occupied either by troops or by collective bodies of the inhabitants.

That medical officers be required to make frequent inspections of the commands to which they belong, and that any suspicious case of fever be immediately isolated and the fact of its occurrence reported to these headquarters.

Canteens should be filled daily with tea or coffee, and these beverages used habitually instead of water, unless that has been previously boiled. Very Respectfully,

CHAS. R. GREENLEAF, Colonel,
Asst. Surg-Genl. U.S.A., Chief Surg. Army in the Field.

Fever patients in the court of the Spanish military hospital.

HEADQUARTERS OF THE ARMY,
OFFICE OF THE CHIEF SURGEON, ON BOARD U.S.S. "YALE,"
EN ROUTE TO PORTO RICO.
July 24, 1898.

Circular No. 1.

1. Medical officers will, upon receipt of this circular, report to the Chief Surgeon of the Army the number of medical officers, hospital stewards, acting hospital stewards and privates of the Hospital Corps on duty with their command. Also the number of ambulances, litters and tents, and if medical supplies are insufficient, note the general character needed. This report will be made upon the following form:

Com- mand.	Med. Offs.	Hosp. Stwds.	Actg. H. S.	Priv- ates.	Lit- ters.	Ambu- lances.	Hosp. Tents.	Character of Medical Supplies Needed.

2. A field hospital will be organized at the Army base as soon as possible after landing, and a depot of supplies will be connected with it. As we are widely separated from the source of our supplies a strict economy in their use is necessary; Surgeons of Divisions and Brigades will give their personal attention to this important subject.

3. Extreme vigilance is enjoined upon Medical Officers in the matter of camp sanitation; errors in this particular being promptly reported to the respective commanding officers.

4. The experience at Santiago has demonstrated the efficiency of properly applied first dressings to gunshot wounds; these should be left untouched until the patient arrives at the base hospital, unless the condition of the wound absolutely demands a redressing en route from the first dressing station. All diagnosis tags will be marked "Dressing not to be removed"

or "Redressing required," as the condition demands. Unless an imperative necessity exists, surgical operations will not be attempted at the front.

CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

QUARANTINE REGULATIONS FOR THE BASE OF THE MILITARY EXPEDITION TO PORTO RICO.

1. Every vessel shall be officially visited by the inspector before communication is made with other vessels or with the shore.

2. A vessel having yellow fever or smallpox on board shall not be allowed to communicate with the shore, or with other vessels, but shall leave the island.

3. Vessels coming from sources of infection shall be detained five days without communicating either with the shore or with other vessels. If at the expiration of this time no cases of fever shall have developed, landing may be made under the following precautions:

All fomites shall be disinfected by one of the following methods: Immersion for one hour in 1-1000 solution bichlorid; sulphur fumigation in a chamber twenty-four hours, four pounds of sulphur being used for each 1000 cubic feet of space; or boiling half an hour with complete immersion. The following need not be disinfected unless directly exposed to infection:

All new and dry material unpacked, all iron and steel implements, all goods in new and original packages, not having been broken or packed in an infected locality. Goods other than textile contained in textile material, such as coffee in sacks, bacon, spices, etc., kept dry and not broken in an infected locality do not require disinfection other than the container, which shall be treated as fomites as above. Fruits, sound, unless exposed in an infected locality need no disinfection. Live stock may be admitted.

Ward in the Spanish military hospital.

Such ships shall be thoroughly cleaned and disinfected by the free use of 1-1000 solution of bichlorid, and by fumigation with sulphur before they may again receive men or supplies.

Ships quarantined shall display the usual flag, and those in detention shall be visited by the inspector daily until the time of quarantine shall have expired.

4. Vessels carrying passengers or having fomites from localities of infection, though they (the vessels) may hail from healthy ports, shall be subject to the same quarantine restrictions as vessels known to hail from infected localities.

5. Due precaution shall be taken to prevent infection of the base of supplies through communication with infected localities along the line of march by teamsters and others. As far as possible they should not be allowed to remain at the base longer than necessary to load and unload, nor to come in such contact as to communicate infection. Stragglers, prisoners and strangers should be immediately sent away.

CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

Major Woodbury was appointed Sanitary Inspector. He met with the hearty co-operation of the city authorities of Ponce in the performance of his onerous and often unpleasant duties. The sanitary conditions of the city underwent a great improvement in a few days. The water-supply was found satisfactory. The absence of a sewerage system threw many obstacles in the way. The appearance of smallpox in a village some distance from Ponce made vaccination among the soldiers who were not protected against this disease and the natives necessary. An abundant supply of vaccine virus was on hand and was at once issued and used. When I arrived at Ponce, August 7, I found typhoid fever raging to an alarming extent. It was desirable to trace the origin of the disease. The absence of typhoid fever this season of the year, its outbreak in all the commands, and the short time that had intervened between leaving the United States and the landing in Porto Rico made it probable that the disease could be traced to the infected camps occupied by the troops before leaving for Porto Rico. General Miles was very anxious to obtain reliable information regarding the origin and spread of the disease. Pursuant to the following order I made an exhaustive and systematic investigation:

HEADQUARTERS OF THE ARMY, OFFICE OF THE CHIEF SURGEON.
PORT PONCE, PORTO RICO, Aug. 10, 1898.

Lieut.-Col. Nicholas Senn, Surgeon U. S. V., Chief of Operating Staff of the Army.

Sir:—You will proceed to the town of Ponce, visit the military and other hospitals in that town, and such of the camps in its vicinity as you may deem necessary, for the purpose of

Ambulance train transporting the sick from the Division Hospital to the Spanish military hospital.

investigating and, if possible, determining the cause of typhoid and other fevers now prevailing in this army, and report the results of your investigation in writing to me. Should you find it necessary to have the services of an interpreter, or other civilian, to aid in your work, you are hereby authorized to employ him, sending the bill to this office for payment.

Very respectfully,
CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

I obtained accurate information of two hundred fever patients, of which number more than 90 per cent. were well-marked typhoid fever, the balance malaria and the results of sunstroke. I estimated the whole number of fever patients in, and in the immediate vicinity of, Ponce at 250. In extending my inquiries to General Brooke's command, with headquarters at Guayama, I found about 145 additional cases; however, in that locality malaria seemed to predominate. Most of the cases came from Chickamauga by way of Charleston and Newport News. The Second and Third Wisconsin Regiments fur-

nished the largest contingent. Almost every soldier in the different hospitals belonging to either of these regiments suffered from typical typhoid fever, and what attracted my attention was that the disease appeared to be of a more serious type than in most of the men belonging to other regiments. The locality from which these regiments came, when encamped at Chickamauga, must have been badly infected. As the result of my investigations, I reported to Col. Greenleaf the number of cases found, and that in my opinion the disease was contracted in every instance before leaving the camps in the United States. In view of the fact that most of the cases came from Chickamauga, I suggested at the same time that the Medical Department should recommend immediate evacuation of that camp. In Ponce most of the cases found shelter and care in the Spanish military hospital, then in charge of Major Ten Eyck, U. S. A. The club-house and a school for girls, of the Sisters of Charity, were also placed at the disposal of the chief surgeon and were soon filled with patients. Miss Chancellor of New York did excellent service as a

Ambulance unloading the sick at the door of the Club House in Ponce used as a temporary hospital.

nurse in the former temporary hospital. A congestion which occurred in the military hospital, and which could not be prevented, took place when General Wilson's division moved forward and unloaded at the door all of the sick in the Division hospital, some 150 in number. The overcrowded condition was remedied the next day, when a large number of the more grave cases were sent on board the *Relief*, anchored in the harbor of Ponce. Medical supplies were in abundance at all times and were freely issued without any formality. The *Relief*, and later the yacht *May*, brought an additional supply, with many delicacies for the sick. Milk was bought and freely supplied to the sick. It is the intention of the chief surgeon to establish an extensive out-door receiving hospital as soon as the tentage arrives, which, according to information received from the Surgeon-General, is now on the way. The number of new cases of typhoid fever in the Porto Rican army will probably be a limited one, and if the troops are recalled as soon as the treaty of peace has been signed, we need to entertain little fear of the indigenous spread of the disease.

Arroya, Porto Rico, Aug. 12, 1898.

TYPHOID FEVER IN THE PORTO RICAN CAMPAIGN.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF OPERATING STAFF WITH THE ARMY IN THE FIELD.

[Written for the JOURNAL exclusively.]

In Cuba our army met as its most formidable enemy one of the most dreaded of all infectious diseases—yellow fever. The Cuban invasion was characterized by hasty action, a lack of organization, and inadequate preparation. The last crippled the medical department and is responsible for the early and extensive outbreak of yellow fever. In less than two weeks after our army landed in Cuba, yellow fever made its appearance, and almost simultaneously attacked the troops from Siboney, the base of invasion, to the trenches before Santiago. In less than two weeks from its appearance nearly 500 fever cases, most of them yellow fever, impaired the fighting force and seriously taxed the limited resources of the medical department. Fortunately for the army, that type of the disease was mild, the number of deaths few as compared with some of the epidemics in the past. Under the circumstances, it was fortunate that Santiago surrendered in time, as the fighting force was being rapidly reduced by the invasion of yellow fever and the ever-present malaria. In planning the Porto Rican invasion the possible repetition of a similar experience was taken into due consideration, and timely precautions against such an occurrence were adopted and carried into effect. So far our troops in Porto Rico have escaped yellow fever, but soon after their landing, fever cases came into the hospitals at an alarming rate. Many of the soldiers were attacked on the transports or soon after landing. After landing in Ponce, August 8, I found at least 250 cases of fever in the different hospitals in the city and the division hospital near the city limits. Even a superficial examination sufficed to prove that most of the cases were typhoid fever. The time which intervened between the departure of the troops from the United States and the appearance of fever, made it more than probable that the infection did not have an indigenous origin. In some of the cases it was difficult, in others impossible, to make a differential diagnosis between malaria and typhoid fever without the use of the microscope, and this invaluable diagnostic resource in such cases was unfortunately not at hand. Another difficulty we had to contend with was the lack of recorded thermometric observations, which, when accurately made and systematically recorded, prove of such signal service in distinguishing between these two febrile conditions.

Pursuant to an order issued by Col. Greenleaf, chief surgeon of the army in the field, I investigated for two consecutive days all of the fever cases then in the hospitals, for the purpose of locating the origin of typhoid fever. In this work I availed myself of the kind and able assistance of Dr. M. O. Terry, Surgeon-General of the State of New York, and Acting Assistant-Surgeon Greenleaf, son of the chief surgeon. We made a careful examination of 200 cases of fever as they presented themselves, noted the principal symptoms and tabulated them (see following page).

A careful study of these cases, as well as subsequent developments, furnished adequate proof that 90 per cent. of them were genuine typhoid fever. No further doubt could remain in tracing the infection to the camps occupied in the United States. The great

ORIGIN OF TYPHOID FEVER CASES.

No.	Age.	Company.	Command.	Camp.	Arrived in Porto Rico, via.	Date and Place of Attack.	Tongue.
1	19	F.	16th Pa.	Chickamauga.	July 25, Charleston.	Before embarking.	Furred, red at margin.
2	20	F.	16th Pa.	"	" "	"	Furred, red at margin.
3	28	.	2d Wis.	"	" "	On trans.-port.	
4	16	Headqr. cook.	16th Pa.	"	" "	July 16, on transport.	Dry, glazed, sordes.
5	23	D.	3d Wis.	"	" "	Two days after disembarking.	Flabby, red.
6	21		2d Wis.	"	" "	Fourth day after disembarking.	Coated, red margin.
7	23	D.	2d Wis.	"	" "	On transport.	Coated, red margin.
8	21	I.	16th Pa.	"	" "	On transport.	Coated...
9	21	C.	2d Wis.	"	" "	On transport.	Coated, red at tip and margin.
10	21	C.	2d Wis.	"	" "	On transport.	Coated, red at tip and margin.
11	21	C.	2d Wis.	"	" "	On transport.	Coated, red at tip and margin.
12	17	A.	3d Wis.	"	" "	Three days after disembarking.	Coated, red at tip and margin.
13	22	I.	3d Wis.	"	" "	On board, one day before landing.	Red in center.
14	24	G.	11th U. S. Inf.	Tampa.	August 2.	On transport.	Dry, red at tip.
15	19	H.	16th Pa.	Chickamauga.	July 28, Charleston.	Shortly after landing.	Dry, furred, red at margin.
16	21	H.	16th Pa.	"	" "	Shortly after landing.	Flabby.
17	28	H.	3d Wis.	"	" "	Shortly after landing.	Red, dry, glazed.
18	18	M.	2d Wis.	"	" "	On transport.	Coated, red tip and margin.
19	24	I.	2d Wis.	"	" "	Before embarking.	Dry, glazed.
20	31	M.	2d Wis.	"	" "	Before embarking.	Dry, glazed.
21	30	F.	3d Wis.	"	" "	In Charleston.	
22	20	M.	2d Wis.	"	" "	Two days after disembarking.	Large, flabby, coated.
23	22	K.	3d Wis.	"	" "	On transport.	Large, flabby, coated.
24	21	N.	3d Wis.	"	" "	After disembarking.	Furred, red at tip and margin.
25	18	Driver.	4th Pa.	"	July 25, "	After disembarking.	Coated, red at tip and margin.
26	18	B.	2d Wis.	"	" "	After disembarking.	Coated, red at tip and margin.
27	23	B.	6th Ill.	Alger.	" "	Six days ago, here.	Large, flabby, coated.
28	21	L.	3d Wis.	Chickamauga.	" "	After disembarking.	Large, flabby, coated.
29	21	L.	3d Wis.	"	" "	Five days ago.	Slightly furred.
30	20	A.	11th U. S. Inf.	Tampa.	August 2.		Dry, fissured, sordes.
31	29	F.	2d Wis.	Chickamauga.	July 25, Charleston.	Two weeks ago, after landing.	Flabby, red tip.
32	23	Hosp. corps.	2d Brigade.	"	July 30, Newport News.	On transport.	
33	25	A.	17th U. S. Inf.	Tampa.	August 2.	Eight days; Porto Rico.	
34	26	L.	2d Wis.	Chickamauga.	July 25, Charleston.	On ship.	Coated.
35	18	B.	2d Wis.	"	" "	On ship.	Coated.
36	24	I.	2d Wis.	"	" "	On ship.	Flabby, coated.
37	26	B.	2d Wis.	"	" "	On ship.	Large, flabby.
38	32	B.	6th Mass.	"	July 28, Charleston.	On ship.	Dry, large, cracked.
39	23	H.	2d Wis.	"	" "	On ship.	Dry, coated.
40	23	Ambulance.		"	August 2, Newport News.	On ship.	
41	23	D.	2d Wis.	"	August 2, Charleston.	After disembarking.	Coated, red at tip and edge.
42	27	D.	6th Ill.	Alger.	July 25, Charleston.	On ship.	Large, flabby, coated.
43	28	F.	6th Mass.	"	" "	Three days after disembarking.	Flabby.
44	21	A.	2d Wis.	Chickamauga.	" "	Six days ago.	Dry, margin red.
45	23	A.	5th U. S. Cav.	Tampa.	August 2, Port Tampa.	On transport.	Flabby, coated.
46	22	A.	5th U. S. Cav.	"	" "	On landing.	Coated, red at tip and edge.
47	21		2d U. S. Cav.	"	" "	On boat.	Coated, red at tip and edge.
48	21	A.	6th Mass.	Alger.	July 25, Charleston.		Slightly coated, red in center.
49	27	C.	19th U. S. Inf.	Tampa.	August 2.	On boat.	
50	25	C.	19th U. S. Inf.	"	" "	Six days ago.	Coated, red in center.
51	32		2d Wis.	Chickamauga.	July 25, Charleston.	On boat.	Coated, red in center.
52	20	C.	2d Wis.	"	" "	After landing.	Coated.
53	32	Officer.	Transport.	Tampa.			
54	18	C.	6th Mass.	Alger.	July 24, Charleston.	After landing.	Coated.
55	20	C.	16th Pa.	Chickamauga.	" " "	On boat.	
56	19	K.	6th Mass.	Alger.	" " "	July 6.	
57	23		6th Ill.	"	" " "	On boat.	Dry, brown, cracked, sordes.
58	30	B.	5th U. S. Art.	Tampa.	August 2.	Nine days ago, on boat.	Coated.
59	24	Ambu. corps.		Chickamauga.	July 24, Charleston.	On boat.	Coated, red at tip and margin.
60	19	B.	6th Ill.	Alger.	" " "	On land, two weeks.	Coated, red at tip and margin.
61	19	B.	6th Ill.	"	" " "	On land, four days.	Coated, red at tip and margin.
62	22	I.	7th Cav.	Chickamauga.	August 2.	On shore.	Lips and tongue dry.
63	26	I.	6th Mass.	"	July 24.	On boat.	
64	26	I.	Signal corps.	"	July 24, Newport News.	On boat.	Coated.
65	19	B.	11th U. S. Art.	Tampa.	August 2.	On boat.	Sordes, coated, red at tip.
66	29	C.	3d U. S. Art.	"	" "	On shore, five days.	
67	36	D.	6th Mass.	Alger.	" " Charleston.	On boat, eight days ago.	Coated, flabby.
68	18	D.	6th Mass.	"	" " "	At Alger.	
69	20	E.	6th Mass.	"	" " "	On shore, August 1.	Moist, sordes.
70	18		16th Pa.	Chickamauga.	July 24, Charleston.	On boat.	Coated, lips dry.
71	22	D.	2d Wis.	Alger.	" " "	On boat.	Coated, red at tip.
72	19		5th Ill.	"	" " "	On shore, twelve days.	Coated, red at tip.
73	24	B.	2d Wis.	Chickamauga.	" 25 "	On boat.	
74	20	C.	16th Pa.	"	" " "	On boat.	Furred, dry, red margin.
75	22	L.	16th Pa.	"	" " "	After reaching shore.	Moist.
76	26	A.	16th Pa.	"	" " "	After reaching shore.	Large, coated.
77	18	I.	6th Ill.	"	" " "	On boat.	Moist, coated.
78	21	I.	7th U. S. Inf.	Tampa.	August 2.	On boat, about two weeks.	Dry, brown, fissured.
79	24	C.	3d U. S. Art.	"	" "	On boat.	Coated, furrowed, moist.
80	18	K.	2d Wis.	Chickamauga.	July 25, Charleston.	On boat.	Coated, red at tip and margin.
81	29	M.	6th Ill.	Alger.	" " "	On boat.	Dry, margins red.
82	22	B.	5th U. S. Art.	Tampa.	" 24, Cuba.		Dry, margins red.
83	21		19th U. S. Inf.	"	August 2.	On boat.	Dry, margins red.
84	24	D.	3d U. S. Art.	"	" "	On boat.	Coated, red tip and margin.
85	26	B.	2d Wis.	Chickamauga.	July 25.	On boat.	Coated.
86	21	A.	3d U. S. Art.	Tampa.	" " Cuba.	On boat.	Moist, coated.
87	29		3d U. S. Art.	"	" "	On boat, two weeks ago.	Dry, furred.
88	19	M.	6th Ill.	Alger.	" " Charleston.	On board.	Dry, coated, sordes.
89	20		6th Ill.	"	" " "	On board.	Dry, coated, sordes.
90	20	L.	6th Ill.	"	" " "	On board.	Dry, coated, sordes.
91	25		4th U. S. Art.	Tampa.	August 1, Cuba.	On board, four weeks.	
92	23	A.	3d Wis.	Chickamauga.	July 28, Charleston.	On board.	Large, flabby.
93	29	M.	19th U. S. Inf.	Tampa.	August 2.	On board.	Dry, coated.
94	21	L.	2d Wis.	Chickamauga.	July 25, Charleston.	On shore.	Large, white, coated, flabby.
95	22	C.	2d Wis.	"	" "	On shore, one week.	Coated, red tip and margin.
96	26	B.	19th U. S. Inf.	Tampa.	August 2.	On shore.	Coated, flabby.
97	19	Ambu. corps.	Pa.	Chickamauga.	" " Newport News.	On board.	Coated, red tip and edge.
98	21	K.	3d Wis.	"	July 25, Charleston.	On shore, two weeks.	Coated, flabby.
99	28	C.	6th Mass.	Alger.	" " "	On shore, two weeks.	Large, furrowed, dry.
100	22	C.	6th Mass.	"	" " "	Four days on boat.	Coated, margins red.
101	20	D.	2d Wis.	Chickamauga.	" " "	One week on shore.	Coated, margins red.
102	20	M.	6th Mass.	Alger.	" 29 "	On boat.	
103	24	F.	3d Art.	Tampa.	August 2.	Seven days after landing.	Coated, red tip and margin.
104	21	Hosp. corps.	6th Ill.	Alger.	July 25.	7 days after landing, Charleston.	Coated, flabby.
105	20	Hosp. corps.	6th Ill.	"	" "	7 days after landing, Charleston.	Coated, red tip and margin.
106		I.	6th Ill.	"	" "	7 days after landing, Charleston.	
107	24	D.	6th Ill.	"	" "	5 days after landing, Charleston.	Large, flabby, white coated.
108		C.	6th Mass.	"	" "	3 weeks before land., Charleston.	Dry, brown, fissured.
109	20		1st U. S. Prov.	Tampa.	August 2.	12 days before land., Charleston.	Dry, red, glazed.
110	24	D.	4th U. S. Art.	"	July 30.	Before landing, Cuba.	White.

ORIGIN OF TYPHOID FEVER CASES.

Temp.	Pulse	Chest.	Abdomen.	Roseola.	Spleen.	Epistaxis.	Diarrhea.	Remarks.
103	72	Bronchitis	Tender	Present.	Enlarged	No.	Yes.	
101	96	Bronchitis, slight	Tender	Present.	Enlarged	No.	No.	
								Moribund.
99.3	100		Tender	Not pr's at	Enlarged	No.	Yes.	Great emaciation.
102.2	110		Tympanitic		Enlarged	No.	Yes.	
101.3	100		Gurgling in right iliac fossa	Marked	Enlarged	No.	Yes.	
102.2	105	Bronchitis, slight		Present	Enlarged		No.	
102.2	105				Enlarged		Yes.	
102	92			Present.	Enlarged		Yes.	
103.1	100	Bronchitis, slight					Yes.	
100.2	80	Bronchitis	Gurgling in right iliac fossa	Present.		No.	Yes.	Chills at first.
99	98		Gurgling in right iliac fossa	Present.	Enlarged	No.	Yes.	
100.3	88	Bronchitis	Gurgling in right iliac fossa	Present.	Enlarged		Yes.	Had measles two weeks ago. No chills.
101.3	80				Enlarged+		Yes.	
102.2	100			Present +	Enlarged		Yes.	Intestinal hemorrhage.
100.3	76		Gurgling in right iliac fossa	Present.	Enlarged+			
102.3	80		Gurgling in right iliac fossa		Enlarged+	Yes.	Yes.	
101	72		Gurgling in right iliac fossa		Enlarged+	Yes.	Yes+	
101.2	72				Enlarged+	Yes.	Yes.	Doubtful.
99.1	76							
102.1	23	Bronchitis			Enlarged+	Yes.	Yes.	
102	72				Enlarged	Yes.	Yes.	
102	74		Gurgling in right iliac fossa	Present.	Enlarged	Yes.	Yes.	Chills.
104.3	84			Present.	Enlarged	Yes.	Yes.	
101.2	80		Gurgling in right iliac fossa	Present.	Enlarged		Yes.	
99	64				Enlarged			Doubtful.
99	64				Enlarged			Doubtful.
103	80				Enlarged	Yes.	Yes.	
101.4	96	Bronchitis	Gurgling in right iliac fossa	Present.	Enlarged	Yes.	Yes.	Delirious.
101	78		Tender	Present.	Enlarged		Yes.	Chill at first; abscess over left olecranon process.
99	76		Tympanitic		Enlarged		Yes.	Doubtful.
100.2	72		Gurgling in right iliac fosea	Present.	Enlarged		Yes.	
102.2	84		Gurgling in right iliac fossa		Enlarged			
100.2	78		Gurgling in right iliac fossa		Enlarged		Yes.	
102	84	Bronchitis	Tympanitic	Present.			Yes.	
104.2	84		Tympanitic	Present.	Enlarged			
103	84		Tympanitic		Enlarged			
99.4	60		Flaccid				Yes.	Doubtful.
104	84			Present.	Enormous			Doubtful.
102	72		Tympanitic	Present.	Enlarged		Yes.	
104	86		Gurgling in right iliac fossa		Enlarged		Yes.	
100.3	96				Enlarged			Doubtful.
104	106		Tympanitic				Yes.	No chills.
102	80		Tender		Enlarged		Yes.	
104.2	84		Pain in iliac fossa		Enlarged		Yes.	
102.1	92		Pain in iliac fossa		Enlarged		Yes.	
104.2	88		Tender		Enlarged			
102.2	80	Marked bronchitis.	Tender		Enlarged		Yes.	
101.2	108				Enlarged		No.	
101.1	76		Gurgling in right iliac fossa		Enlarged		Yes.	
103.3	80		Gurgling in right iliac fossa		Enlarged–		Yes.	Doubtful.
101.4	120	Pneumonic at apex.						
102.2	80		Gurgling in right iliac fossa		Enlarged		Yes.	
103.2	90							Abscess in trochanteric region.
98.2	70						Yes.	
104	96	Bronchitis	Tender and gurgling	Present.	Enlarged	No.	Yes.	
101	80		Gurgling in right iliac fossa		Enlarged		Yes.	
102	70		Gurgling in right iliac fossa	Present.			Yes.	
103	80				Enlarged+			Doubtful.
103	90			Present.	Enlarged+			Doubtful.
103	96			Present.	Enlarged		Yes.	Doubtful.
98	70						Yes.	
102	98		Tympanitic		Enlarged			
103	90		Gurgling in right iliac fossa		Enlarged		Yes.	Chills.
98.2	70							Convalescent.
102	80				Enlarged		Yes.	
100	70						Yes.	No typhoid symptoms.
103	112		Gurgling in right iliac fossa		Enlarged		No.	
102	100		Tender		Enlarged	Yes.	Yes.	
102	100		Tender		Enlarged		Yes.	
104.2	112		Tympanitic		Enlarged		Yes.	
100.3	80							Doubtful.
104	120	Bronchitis	Tympanitic	Present.	Enlarged	Yes.	Yes.	
101	80				Normal.			Convalescent.
101	80				Enlarged			Convalescent.
102	100				Enlarged		Yes.	Convalescent.
102	100	Bronchitis		Present.	Enlarged		Yes.	
101	80				Enlarged		Yes.	
102.2	108	Bronchitis	Pain and gurg. in iliac fossa		Enlarged		Yes.	
98.4	100		Pain and gurg. in iliac fossa		Enlarged			
104	112		Pain and gurg. in iliac fossa	Present.	Enlarged	Yes.	Yes.	
103	112		Pain and gurg. in iliac fossa	Present.	Enlarged	Yes.	Yes.	
101	90				Enlarged			
100	85		Tympanitic		Enlarged	Yes.	Yes.	
103	100				Enlarged	Yes.	Yes.	
102	98		Tender	Present.	Enlarged	Yes.	Yes.	
102.2	95		Tender	Present.	Enlarged	Yes.	Yes.	
103	90		Tympanitic			No.	Yes.	
103	100		Tympanitic			No.	Yes.	Had a sunstroke.
						Yes.		
102.1	70				Enlarged			
102.4	70	Bronchitis	Tender and gurg., r. i. fossa		Enlarged			
101	60				Enlarged	Yes.	Yes.	
101.2	88				Enlarged		Yes.	Doubtful.
102.1	92		Tender		Enlarged			
102.3	82		Gurgling in right iliac fossa		Enlarged	Yes.	Yes.	
103.1	80		Gurgling in right iliac fossa		Enlarged		Yes.	
102.2	100		Gurgling in right iliac fossa		Enlarged		Yes.	
102	72	Bronchitis	Tenderness		Enlarged			Chills.
101.1	124		Tympanitic		Enlarged		No.	Chills.
104.4	100		Tenderness		Enlarged			
102.1	80		Gurgling, right iliac fossa		Enlarged			
100.3	80				Enlarged			
103	80		Gurgling, right iliac fossa		Enlarged			
101	120							Not typhoid fever.
100.3	88				Enlarged			
105	84		Gurgling, right iliac fossa		Enlarged		Yes.	
103	84		Gurgling, right iliac fossa		Enlarged			
101	92				Enlarged+			

ORIGIN OF TYPHOID FEVER CASES.

111	21	D	2d Wis.	Chickamauga	July 25	Before landing, Charleston	Large, flabby, coated
112	24	Band	2d Wis.	"	"	Since landing, Charleston	White coat
113	25	C	19th U. S. Inf.	Tampa	August 2	Sixteen days before landing	Coated, red at tip
114	23	K	19th U. S. Inf.	"	"	Before landing	Moist, clear
115	31	D	6th Mass.	Alger	July 25	Since landing	Slightly coated
116		F	2d Wis.	Chickamauga	" "	Since landing, Aug. 1, Charleston	
117	32		2d Wis.	"	" "	6 days since landing, Charleston	Coated, indented
118	32	B	4th U. S. Art.	Tampa	" "	Two weeks since landing	
119	21	D	5th Art	"	" "	Five days since landing	
120	23	I	19th U. S. Inf.	"	July 30, Cuba	Since landing	
121	21	C	16th Pa.	Chickamauga	July 27, Charleston	In Chickamauga	Irregularly coated
122	23	A	2d Wis.	"	" "	One week since landing	Red at tip and margin, coated
123	18	B	19th Inf.	Tampa	August 2, Cuba	Eight days before landing	Herpes, sordes, dry, brown
124	22	A	2d Wis.	Chickamauga	July 25, Charleston	Nine days since landing	Slightly coated
125	32	G	19th Inf.	Tampa	" 31	Since landing	Slightly coated
126	23	C	19th Inf.	"	" "	Since landing	Coated, red tip and margin
127	28	C	6th Mass.	"	" 27, Charleston	Since landing	Coated, red tip and margin
128	21		1st Provincial	"	" 25, Cuba	Three weeks before landing	Coated, dry at tip, lips herpes
130	23	C	3d Art.	"	" "	Ten days since landing	Coated, red at tip
131	25	G	19th Inf.	"	August 2, "	Ten days before landing	Dry, coated, sordes on teeth
132	21	F	19th Inf.	"	" "	Six days since landing	Coated, red at tip and margin
133	29	F	16th Pa.	Chickamauga	July 25, Charleston	Day before embarking	Coated, red at tip and margin
134	23		2d Cav.	Tampa	" "	At Tampa	Clear, moist
135	22	H	3d Wis.	Chickamauga	" 27 "	One week since landing	Boated, red tip and margin
136	26	G	6th Mass.	Alger	" "	Before landing	Pale, flabby
137	21	E	6th Mass.	"	" "	Five days since landing	
138		C	3d Art.	Tampa	" " Cuba	Ten days after landing	Coated, flabby
139	28	I	2d Wis.	Chickamauga	" " Charleston	Before landing, July 25	Coated, moist
140	22	A	6th Mass.	Alger	" "	Two weeks since landing	
141	19	Hosp. corps.	1st Brigade	Chickamauga	August 2, Newport News	Before landing	Large, coated, flabby
142	21		6th Mass.	Alger	July 27, Charleston	One week since landing	Flabby, margin red
143	21		2d Wis.	Chickamauga	" 25 "	Ten days since landing	Coated, red tip and margin
144	18	C	3d Art.	Tampa	" " Cuba	Ten days before landing	Coated, red tip and margin
145	18	I	2d Cav.	"	August 2	Before landing	Coated, red tip and margin
146	35	C	3d Wis.	Chickamauga	July 27, Charleston	Ten days since landing	Coated, red tip and margin
147	22	F	2d Wis	"	" "	Since landing	Coated, red tip and margin
148	23	I	2d Wis	"	" "	Three weeks since landing	Glazed, ridged, red
149	22	M	6th Ill.	Alger	" "	Before landing	
150	23	B	4th Art.	Tampa	August 2	Three weeks before landing	
151	26	L	2d Wis	Chickamauga	July 27, Charleston	Since landing	Red, moist
152	20	D	2d Wis	"	" "	Six days since landing	Coated, red margin
153	23		2d Wis	"	" "	Since landing, July 27	Glazed, moist
154	22	B	3d Wis	"	" 29 "	Before landing	Large, coated
155	20	D	16th Pa.	"	" "	Five days since landing	
156	22	C	3d Art.	Tampa	" 27 "	Ten days since landing	Coated,
157	19	F	16th Pa.	Chickamauga	" " "	Before landing	
158	24	H	3d Wis	"	" " "	Before landing	Coated, margins moist
159	19	H	3d Wis	"	" " "	Since landing	
160	22	B	4th Art.	Tampa	August 2	Since landing	
161	19	C	3d Wis	Chickamauga	July 27, Charleston	Before landing	
162	21	E	2d Wis	"	" " "	Since landing, July 28	Clear, moist
163	24	C	3d Wis	"	" " "		
164	32	E	4th Art.	Tampa	" " "	Seven days since landing	Coated, tip red, lips herpes
165	21	I	19th Inf.	"	August 1, Cuba	Before landing	
166	24	A	2d Wis	Chickamauga	July 27, Charleston	Since landing	Slightly coated, fissured
167	24	B	2d Wis	"	" " "	Two weeks since landing	Pale, margins, indented
168	28	A	5th Cav.	Tampa	" " "	When he left Tampa	Slightly coated
169	37	Teamster	"	"	" " "	When he left Tampa	Large, flabby, indented
170			6th Ill.	Alger	July 27, Charleston		Coated, red tip and margin
171			6th Ill.	"	" " "		Coated, red tip and margin
172	23		16th Pa.	Chickamauga	" " "		Flabby, pale, coated
173	23		2d Wis	"	" " "		Flabby, indented
174	23		6th Ill.	Alger	" " "		
175	18		16th Pa.	Chickamauga	" " "		Furred, dry
176			2d Wis	"	" " "		
177	24		6th Ill.	Alger	" " "		
178	21		6th Ill.	"	" " "		Slightly furred
179	25		6th Ill.	"	" " "		
180		Signal corps.		"	" " "		
181	26		16th Pa.	Chickamauga	" " "	Twelve days before landing	
182	21	C	16th Pa.	"	" " "		
183	23	K	16th Pa.	"	" " "	2 days before leaving Charleston	Coated, red tip and edge
184	29	B	2d Wis	"	" " "	Two weeks since landing	Coated, red tip and edge
185	23	A	2d Wis	"	" " "	Two weeks since landing	Coated, dry
186	19	B	19th Inf.	Tampa	" 25 "	Two weeks since landing	Furred, dry, margins red
187	20	A	2d Wis	Chickamauga	" " "	Two weeks since landing	Coated, flabby
188	24		6th corps U. S.	Newport News	" " "	Two weeks since landing	Coated, pale, flabby
189	22		19th Inf.	Tampa	" " "	Since landing, August 2	Coated, red edges and center
190	21	H	11th Inf.	"	" " "		
191	23	B	11th Inf.	"	" " "		Dry, cracked, sordes
192	23		11th Inf.	"			
193		Staff.	16th Pa.	Chickamauga	July 25, Charleston	When he left Chickamauga	Dry, cracked, sordes
194	41	Staff.	4th Pa.	"	August 2, Newport News	Before landing	Moist, glazed, red
195	30	Staff.	6th Ill.	Alger	July 25, Charleston	Before landing, July 19	Heavily coated
196	32	D	2d Wis	Chickamauga	" " "	Before landing	Heavily coated (white)
197	24	H	3d Ill.	"	August 2, Newport News	Before landing	Coated, red at tip and margin
198	22	H	3d Ill.	"	" " " "	Before landing, August 1	Dry, brown, fissured
199	25	C	3d Ill.	"	" " " "	Before landing	Coated, red tip and margin
200	20	D	3d Ill.	"	" " " "	Since landing, August 4	Coated, red tip and margin

prevalence of the disease among the troops, affecting as it did, more or less, all of the regiments, was a source of uneasiness and anxiety on the part of those who were in charge of the invasion. Measures were taken to secure ample hospital room and facilities for the accommodation and proper treatment of those on hand and such as might be brought in later. The order to General Wilson to take up the march toward San Juan made it necessary to evacuate the division hospital. All of the patients were transferred to the Spanish military hospital in Ponce, which caused the temporary overcrowding to which I referred in a former communication. The Spanish military hospital is a substantial, square, one-story building with a large court in the center. It is built of stone, the floors being made of cement or brick tiling. It is on a high hill near the city limits, from which a magnificent view of the city, harbor and surrounding country can be obtained. It has a capacity for about 150 beds. It required a good deal of labor to make this building fit for the reception of patients. Major Dooly and his force worked persistently a whole day in removing the dirt and filth which the Spaniards had left, in their haste in evacuating the city, as an undesirable legacy. The hospital was at once supplied with cots, bedding and hospital stores. The club-house of the

ORIGIN OF TYPHOID FEVER CASES.

103.4	88		Tympanitic			Enlarged		Yes.	
102.2	84			Numerous		Enlarged			
103.1	84					Enlarged+			
103	92					Enlarged+		Yes.	Doubtful.
101	92					Enlarged+			Doubtful.
100	88								
101.3	92		Tenderness, right iliac fossa			Enlarged+		Yes.	
98	88								Convalescent.
99	64								Convalescent.
99.2	100								Convalescent.
102.3	100		Tender			Enlarged			
101.5	98		Tender		Present.	Enlarged+			
101.2	98		Tympanitic		Present.	Enlarged		Yes.	
102.1	80							Yes.	Doubtful.
102.3	80				Present.				
102.3	80					Enlarged			
104	84					Enlarged		Yes.	Chills, doubtful. (Mustered in on day of sailing.)
103.4	84		Tender		Present.	Enlarged			
102.4	80				Present.	Enlarged		Yes.	Pulse dichrotic; hemorrhage (intestinal).
104.3	88					Enlarged	Yes.	Yes.	
104.1	84		Tender		Present.	Enlarged			
101	76					Enlarged	Yes.	Yes.	
102	72					Enlarged			
102	72								Doubtful.
100.2	86								Sunstroke.
100	72								
99.2	76					Enlarged			Malaria.
101.2	72					Enlarged		Yes.	Doubtful.
									Sunstroke; treated by Spanish doctor at Guanica.
			Tender, gurgling rt. il. fossa			Enlarged		Yes.	
103	99		Tympanitic			Enlarged			
102	70		Tender, right iliac fossa			Enlarged		Yes.	
102	96		Tender, right iliac fossa						
104	100		Tender, right iliac fossa			Enlarged			
100.4	80		Tympanitic			Enlarged		Yes.	
102.2	85		Gurgling, right iliac fossa			Enlarged		Yes.	
103	80	Bronchitis	Gurgling, right iliac fossa			Enlarged			
99.4	74							Yes.	Overcome by heat; chills (6); malaria.
100.2	80					Enlarged		Yes.	Convalescent.
102.2	80		Tympanitic			Enlarged			
101.2	74		Tympanitic			Enlarged			
102.1	90	Diffuse bronchitis	Tympanitic			Enlarged		Yes.	
102	72		Tympanitic			Enlarged		Yes.	
92	98.4								Doubtful; convalescing.
101.2	82		Gurgling, right iliac fossa			Enlarged			
101.3	70								Convalescing.
101.2	84					Enlarged		Yes.	
98	68								Convalescing
98	84					Enlarged	Yes.	Yes.	One chill.
99	70							Yes.	Sunstroke; convalescing.
101.4	68	Bronchitis	Tender, right iliac fossa			Enlarged+	Yes.	Yes.	
98	68					Enlarged+			Convalescing.
103.2	70		Tender, right iliac fossa			Enlarged		Yes.	
99	72					Enlarged+			
99	64					Enlarged+			Convalescent.
102	81		Tender, right iliac fossa			Enlarged			
102	80		Tender, right iliac fossa			Enlarged		Yes.	
						Enlarged		Yes.	Malaria.
101	85		Gurgling, right iliac fossa	Present.		Enlarged			
102	72		Tympanitic			Enlarged			
100	110	Bronchitis				Enlarged			Doubtful.
102						Enlarged			Epididymitis right side; doubtful.
98.4	98								Sunstroke.
98.4	99					Enlarged			Convalescent.
Nor.	Nor.					Enlarged			Nostalgia; convalescence.
Nor.	Nor.					Enlarged			Malaria; convalescence.
100	84					Enlarged			Malaria; convalescence.
Nor.	Nor.					Enlarged			Malaria; convalescence.
99	55					Enlarged			Malaria; convalescence.
						Enlarged			
						Enlarged			
102	84		Gurgling, right iliac fossa			Enlarged			
102	98		Gurgling, right iliac fossa			Enlarged	Yes.		Three intestinal hemorrhages.
102	102					Enlarged		Yes.	
102	78		Gurgling, right iliac fossa			Enlarged	Yes.	Yes.	
104	98					Enlarged	Yes.		
102	80		Gurgling, right iliac fossa			Enlarged			
100.4	92		Gurgling, right iliac fossa			Enlarged	Yes.		Hemorrhages.
100.2	80		Gurgling, right iliac fossa			Enlarged	Yes.	Yes.	
104.4	124	Pneumonic condition	Gurgling, right iliac fossa			Enlarged		Yes.	Death.
103.4	104	Bronchitis			Present.	Enlarged—		Yes.	
101	90		Pain in hypogastrium					No.	Gastric fever.
101	80					Enlarged	No.		Not typhoid.
102	72				Present.	Enlarged	No.	No.	
102	80	Bronchitis	Gurgling, right iliac fossa		Present.	Enlarged		Yes.	
103.1	100		Gurgling, right iliac fossa		Present.	Enlarged+		Yes.	
103	80		Gurgling, right iliac fossa		Present.	Enlarged	Yes.	No.	

city, and a school for girls in charge of the Sisters of Charity, were offered to the authorities for hospital use, and courtesy was promptly accepted. For over a week the sick officers occupied the club-house and about fifty patients found comfortable quarters and excellent treatment in the school-house. Ponce has a large charity hospital, the "Tricoche," with 200 beds, under the care and management of the Sisters of Charity. The hospital is a model of cleanliness and comfort. Col. Greenleaf made arrangements with the city authorities to open the doors of this excellent institution for sick officers. I am sure that every one who will enjoy the kind treatment and excellent care of the Sisters in these great institutions of charity will have a good word for this ancient and worthy order. Out of the 200 cases of fever examined in the different hospitals in Ponce, and which appear in the table, the following diagnoses were made at the time: Gastric fever, 2; effects of sunstroke, 6; malaria, 9; doubtful, 21; typhoid fever, 162—total, 200.

I am satisfied that of the doubtful cases a sufficient number developed typhoid fever to bring the whole number of cases up to 280. In reference to the time the disease developed the following can be gleaned from the table: The first symptoms appeared before leaving the United States, 8; on transports, 86; within

ten days after landing, 68, out of a total of 162.

As regards the place of infection the cases came from: Chickamauga, 90; Tampa; 48; Camp Alger, 23, Newport News, 1—total, 162.

The small number coming from Camp Alger, where the disease gained such a firm foothold, which led to the abandonment of the camp, is to be explained by the fact that a large number of fever cases, coming from that camp, were returned to the United States soon after landing, by order of Col. Greenleaf. All regiments were not affected alike by this disease. Among the troops in Porto Rico the typhoid fever cases were distributed as follows:

2d Wisconsin	42
3d Wisconsin	17
16th Pennsylvania	17
6th Massachusetts	15
19th U. S. Infantry	15
6th Illinois	11
3d Artillery	10
4th Artillery	5
11th U. S. Infantry	5
1st Provisional Corps	4
Hospital Corps	4
17th U. S. Infantry	3
2d Cavalry	3
5th Cavalry	3
3d Illinois	4
4th Pennsylvania	2
Signal Corps	2
5th Artillery	1
Total	162

In tabulating the symptoms the following facts appear:

Tongue.	Dry, coated, red at tip and margin.	10.
	Coated, white fur.	21.
	Coated, pale, flabby.	17.
	Coated, red tip and margin.	56.
	Dry, brown and fissured.	20.
	Moist, glazed, red.	13.
	Sordes, lips and teeth.	12.
Abdomen.	Tympanites.	29.
	Tenderness and gurgling right iliac fossa.	71.
	Rose spots.	37.
	Spleen enlarged.	141.
	Spleen markedly enlarged.	20.
Epistaxis during prodromal stage		28
Diarrhea		87
Intestinal hemorrhage		3
Bronchitis		20
Delirium		1

The absence of delirium in all cases but one is remarkable, but it must not be forgotten that nearly all of the cases were examined during the early stages of the disease. In quite a number of cases this symptom appeared later. From the symptoms and the death-rate, ascertainable at this time, it is evident that the disease pursued a comparatively mild course. Nearly 200 of the more grave cases were transferred to the hospital ship *Relief*, which sailed from Ponce for New York August 15. Of this number fourteen died en route and twelve were buried at sea. In two of these cases death resulted from complications. In one case gangrene of the penis, which assumed a progressive form, was the direct cause of death. In one case a fatal termination threatened during the third week of the disease from laryngitis and lobular pneumonia. A metastatic abscess of the submaxillary gland, which developed in one case, deserves mention as a rare complication of typhoid fever.

RETURN OF THE HOSPITAL SHIP "RELIEF" FROM PORTO RICO.

The *Relief* sailed from Ponce, Porto Rico, August 15, for New York, and called on her way at Mayaguez to complete her precious cargo of sick and wounded. All of the wounded at the last port were taken on board. The entire number of patients on leaving Porto Rico was 255, the full capacity of the floating hospital. It is probably the first time in the history of the world that so many fever cases were treated on a hospital ship and conveyed from a foreign country to their homes. The first day out a brisk breeze caused considerable rolling and pitching of the ship, which induced some cases of seasickness among the patients, but did not seem to unfavorably influence the disease. The female nurses worked faithfully and proved of the utmost value to the sick. Fourteen of the more severe cases of typhoid fever died on the way to New York. Many of the patients improved rapidly during the voyage. The *Relief* has done all and more than was expected in serving as a temporary hospital and as an ambulance ship in the treatment and transportation of the sick and wounded.

New York, Aug. 20, 1898.

SOCIETY PROCEEDINGS.

The Fourth International Congress for the Study of Tuberculosis.

Held at Paris, July 27 to August 2.

The Congress was not distinguished by any striking communication, but showed a general awakening on the part of the public and the authorities in many countries, to the necessity of prophylaxis in regard to tuberculosis. The official resolutions adopted by the Congress have already been published in the JOURNAL, page 483. It is remarkable that France is behind the rest in the matter of legislation requiring isolation of infected cattle. Norway is the most advanced of the European countries in this respect, but has very few animals infected. She requires animals seriously affected to be slaughtered at once, and animals that react to tuberculin to be branded and only sold for slaughter. No indemnity is paid to the owners. The regulations in Denmark are somewhat similar, but the owner receives an indemnity of one-quarter to one half the value of the animal when condemned by the inspector. The calf of a tuberculous cow must also be taken away from her and raised on milk that is boiled, or from a healthy cow. The proportion of tuberculous calves has fallen from 15.5 in 1895, to 10.6. Professor Bang of Copenhagen delivered the address on this subject, and stated that the rigorous measures adopted are bearing fruit, as the disease is not increasing, but the reverse. He considers the *first* tuberculin test the most reliable, and adds that animals should rest a few days after a journey or other exertion, as otherwise the test is not trustworthy. It is not infallible at the best. The regulation has quite recently been adopted in Denmark, that no dairy can sell skimmed or buttermilk without first heating it to 85 degrees C., which does not affect the taste of any milk if cooled rapidly afterward. The Danish law of March 26 requires the immediate slaughter of a cow affected with tuberculous mammitis. Siegen of Luxenburg urged the more general adoption of the practice of sterilizing very much infected meat by cooking with steam under pressure at 110 to 125 degrees C. for two or three hours, as is now done in some places in Germany and Holland. The meat and gravy thus obtained is nutritious and savory, and is eagerly purchased by the poor at half a franc the kilo. No other process actually sterilizes meat from animals with generalized tuberculosis. Magnan of Nice described the fine results obtained there by giving official certificates to dairies found free from tuberculosis, with tags for the animals to wear that had passed the tuberculin test. He hopes to get the daily papers to call attention to these model dairies often, and the public to patronize them, also to have the public institutions refuse to purchase milk except from certified cows.

The members of the Congress first gathered at the new model Boucicaut Hospital, where they witnessed the operation of the frigor or crymotherapeutic service which is fulfilling expectations and brings back the appetite, even in the most pronounced cases of anexoria (*vide* JOURNAL, xxx, 1116). The ozone generator was also inspected, and a couple of meetings during the Congress were devoted to radioscopy and radiography of tuberculous subjects by skilled experts. Finsen's treatment of

"Lupus with Concentrated Light" was also described at one meeting, with projections (*vide* JOURNAL, August 6). The address of the President, Professor Nocard, stated that out of 140,000 deaths every year from tuberculosis in France, 100,000 could be averted if contagion could be prevented. The difficulties of

HOME DISINFECTION AMONG THE POOR

were graphically portrayed by MARTIN, who described the work accomplished in a certain quarter of Paris where 100 tuberculous subjects resided. Their rooms, linen, etc., were disinfected every week, but from lack of fuel to make a fire, the subjects were frequently unable to sterilize daily the cuspidors provided, and frequently they had no linen to disinfect. In some cases they were turned out of doors by the family from fear of contagion. E. Guiter of Cannes described the success of the measures adopted along the Riviera to prevent contagion. The out-of-door life in the sunshine minimizes the danger, and the chambers of tuberculous patients are built to be flooded with sunshine; dry sweeping is prevented as much as possible; all unnecessary drapery and padded furniture is banished; hygienic cuspidors are in universal use, with pocket cuspidors for each patient who seems to be favorably impressed by them (Dettweiler, Vaquier or Petit models). The Medical Society of Cannes has organized a disinfecting service, not only for rooms in which deaths have occurred, but for those occupied temporarily by persons with "open tuberculosis"; all transportable articles that will not be injured by steam under pressure, are disinfected in a Heischer and Geneste sterilizer; the toilet stand, marbles, etc., are washed with sublimate, and the room disinfected with formol vapors generated by a Trillat autoclave; one liter of 38 per cent. formo-chlorol to each hundred cubic meters; the contact prolonged twelve hours. The experiences of Berlioz, Nicolle, Rietsch and Aronson have established the practical value of formo-chlorol for this purpose (see especially the *Marseilles Méd.* Nov. 1, 1897). Disinfection in this manner has been performed 258 times at Cannes during the season of 1898. The physician notifies the proprietor on a slip furnished by the Board of Health, when he considers disinfection necessary. The proprietor notifies the disinfecting service, which proceeds to the task under the supervision of a city employé. The Board of Health then remits to the physician his original slip, signed by the disinfecting officer, thus securing a dual supervision, municipal and medical.

Dr. HIRSCHFELDER described his Oxytuberculin, summarizing his communications to the JOURNAL in the last volume. In several of the addresses his name was coupled with Behring's and Koch's, when speaking of recent improvements in tuberculin. He reports seventy cases successfully treated, and stated that the oxytuberculin also cures local tuberculosis.

THE MODEL SANITARIUM

was discussed from every point of view. Bernheim recommends a large central building, with two pavilions connected by wide galleries, with immense piazzas facing the south. The bed-rooms also face the south, and are finished like a surgeon's operating-room. The building is planned for 360 patients, two in each room, and if a four months' residence is sufficient, 1080 can be accommodated during the year. The isolation of tuberculous patients in the hospitals is an important and beneficial measure, now being carried out at the Boucicaut, but it is incomplete and cruel unless supplemented by country sanatoria to which patients can be transferred. As Letulle observed: "the sanitorium will prove the hope of those who are waiting their chance to go there; the delight of those who enter and find themselves regaining health, and a school of hygiene and prophylaxis for all who are so fortunate as to have passed through it."

Prof. LANDEUZY delivered an address on the

PRESENT STATUS OF SERUMATED TOXIN TREATMENT OF TUBERCULOSIS.

concluding: "the conclusions of Koch in regard to the results accomplished by his new tuberculin T. R., have not been confirmed by others, even restricting its use, as he insists, to the non-febrile forms. It is generally acknowledged to be harmless, and to have a favorable effect on the general health, but its action on the tuberculous lesions is less easily established. Its effect on cutaneous tuberculosis is more decided, and the determatologists of Germany and England unite in proclaiming that the facts already observed justify further investigation. Koch has succeeded in depriving his first tuberculin of its deleterious properties. Others have modified it, like Hirschfelder, by oxidizing it, or by passing it through the blood of an animal to accumulate antitoxic properties, like Maragliano. Broca and Charrin have also secured favorable results with injections of serum from dogs inoculated with tuberculosis, in patients with surgical tuberculosis. Babes and Proca have also succeeded in manufacturing a serum by injecting animals in turn with tuberculin and dead bacilli, which has proved immunizing and bactericidal *in vitro*. Behring believes that the combination of the resources of serum and toxin therapeutics will, in some distant future, lead to the discovery of the specific remedy for tuberculosis, and Maragliano adds that every effort should be applied to hasten the day. Behring has succeeded in curing a tuberculous cow with repeated injections, and he found that the serum of this cow contained a new substance, a true antitoxin of tuberculosis, as her serum would neutralize a considerable dose of specific toxin. He is at present engaged in investigating whether certain kinds of birds are not better adapted to the production of a tuberculosis antitoxin than mammals. He dissolves the mucin with sodium to extract the toxin from the bacillus more readily, and also dissolves the fatty matters with ether or chloroform, obtaining thus a tuberculin so powerful that one gram will kill 12,500 grams in healthy guinea-pigs (*vide* JOURNAL, XXX, 1482). But even admitting that serum or toxin treatment, or both, will ever produce an actually specific remedy for tuberculosis, we must not expect of it more than it is able to accomplish, i. e., the cure of the specific lesions, and of these alone. This treatment will never be able to cure the secondary infections that invade the tuberculous foci as soon as they become "open." Hence, this specific treatment will never be really effective except in the first stage of the disease. It is evident, therefore, that hygiene will always retain its importance in the treatment of tuberculosis, which, even at the best, is more easily avoided than cured."

Prof. Fournier called attention to the danger of ascribing to tuberculosis what does not really belong to it, and cited an instructive case of mutilating syphilis of the extremities long supposed to be a tuberculous affection. Gallot of Menton reported his remarkable success in curing repeated hemoptysis in the early stages of tuberculosis with hypodermic injections of iodoform as follows: oil of neutral vaselin, 25 centigrams; eucalyptol, 5 grams; iodoform, 75 centigrams. Inject two centigrams daily. Boureau of Tours has found phosphoric acid combined with creosote very effective in improving the general condition of tuberculous subjects. It creates an artificial hyperacidity like that of arthritism, thus modifying the hypoacid tendency which is a favorable soil for tuberculosis. Calot proclaimed the value of puncture and injections of camphorated naphthol and iodoformed ether in tuberculous arthritis except of the hip-joint. Reporting thirty-nine out of forty cases cured without surgical intervention. M. Desprez of Saint Quentin again confirmed the value of small doses of chloroform combined with hygienic measures in the treatment of tuberculosis and appealed to others to test this "harmless and truly marvelous antibacillary substance" in epidemic and contagious diseases, especially tuberculosis. Berlioz of Grenoble announced marked improvement in the general health and gain in weight,—12 kilos in three months in one case, and 4 kilos in fifteen days in another, in a large number of tuberculous patients he has been treating with a medicated serum consisting of normal beer serum, phosphate of guaiacol and extracts of the testes, liver, brain, lungs, thus combining sero- and opotherapeutics. He administers 30 grams a day of this mixture, per rectum, and finds the sweats, expectoration and cough subside with the remarkable improvement in the general condition. He continues the treatment several weeks or months. Fever is not a counterindication. Two febrile cases thus treated showed the same subsidence of the symptoms as the others.

SELECTIONS.

Ancient Medical Fees.—Bombaugh presents a study on "Medical Fees in Ancient Greece and Rome" in the *Johns Hopkins Hospital Bulletin*, for August. The first such fee of which he finds specific record was one recorded by Herodotus as given by Darius to Democedes of Crotona, a slave of Oroetes, and consisting of two pairs of fetters of gold. "In his day, in Greece, the usual fee paid to physicians for incidental visits was very small, in fact not more than two groats, sixteen cents, or about one-thirtieth of the customary fee in England in our time, one guinea." It was customary for physicians to be engaged by the year, by the municipality, and paid from public funds. In Ægina, Democedes received one talent a year, about $2000; in Athens his salary for a year was 100 minæ, $2400, later receiving a like sum when residing at Samos. According to

Pliny, Cleombrotus received 100 talents for the care and recovery of King Antiochus—£24,375, if the Attic talent is meant, $156,000 if the standard of the coin of the Ptolemies." Every Greek city had not only one or more public medical men in the municipal service, whose duty it was to visit the sick in the city and suburbs, but there was also a large dispensary, *iatrium*, where the practitioner, aided by his pupils, held consultations, performed operations and distributed the needful medicines. Beds were reserved for patients who could not be removed, or for very serious cases. The rich being able to be cared for at home, those who needed the aid of the public dispensary were the poor. Yet in the state of society at that period, the isolated poor, those without patron and without brothers, as the phrase went, meaning those who were not members of a society having a mutual benefit fund, were not numerous. But what poor there were, we are assured by historians, were faithfully attended to in accordance with the precept of Hippocrates. Inscriptions show that it was an obligation that was gracefully and generously fulfilled. In the Roman Empire, "no Roman till Pliny's time had ever vouchsafed to practice physic; that office was only performed by Greeks," says Montaigne, in his Essays, "and medicine, therefore, was in the hands of the slaves. In order to attract the Greek physicians to Rome, Cæsar gave them the *jus Quiritium*, and afterward Augustus exempted them from taxation." Under the superintendence of the *archiatri*, Romans later became practitioners, the first physician bearing the title being Andromachus the medical adviser of Nero. During the reign of Nero the *archiatri* were divided into two classes, the physicians of the different quarters of the city, *archiatri populares*, and the physicians of the palace, *archiatri palatini*. The former were assigned to the relief of the poor, and each city was provided with five, seven or ten, according to its size. Rome had fourteen, besides one for the vestal virgins and one for the gymnasia. The latter, the *sancti palatini*, were men of elevated social position, and of high rank, not only in the exercise of their profession, but as counsellors of the government. Both were paid salaries and were allowed special immunities and exemptions. Later on, in the time of Hadrian and Antoninus, such concessions were made still more liberal, and the chief *archiater* ranked as a vicegerent. While the *populares* were obliged to attend their poor patients gratis, they were allowed to receive fees from the rich. They were not appointed by the municipal authorities, but were elected by the people, and while their office was less honorable than that of the *palatini*, it was more lucrative. In the time of Vespasian they had a retiring pension. According to Pliny, at the beginning of the imperial reign eminent physicians made 250,000 sesterces, or about $9750 per annum and Quintus Stertinius, the favorite of the Emperor Claudius, "was content with the honor of serving the Emperor at the rate of 500,000 sesterces ($19,500) per annum, though his fame was such that he might have made 600,000 sesterces, or $25,000 in private practice." Today, in the Vatican, "among the clustered family of the Cæsars," may be seen a statue of Musa, the physician of Augustus, placed among "his family group of bronze and marble memorials as one of the highest honors he could bestow."

Report of the Committee on the "United States Pharmacopeia."—In the "Proceedings of the Missouri Pharmaceutical Association," for 1898, G. H. Chas. Klie, Chairman, St. Louis, gives the report, of which the following is an abstract: Since the revision of the next "Pharmacopeia" is only a few years off, and since, if changes or improvements are to be made in the work, it would certainly be appropriate if the parties most concerned, the medical and pharmaceutical professions, gave their opinions, it was decided to approach the medical profession of Missouri this year and let our successors canvass the pharmacists of Missouri next year. Fifteen hundred circular letters and the same number of postal cards were sent to physicians residing in and around Kansas City, Sedalia and surroundings, Jefferson City and surrounding country, St. Joseph and vicinity, St. Louis and suburbs. The circular letter read as follows:

ST. LOUIS, MO., Dec. 1, 1897.

DEAR DOCTOR: In the year 1900 A.D., the eighth decennial revision of the United States "Pharmacopeia" will take place. The seventh decennial revision of the "Pharmacopeia' was an improvement on the sixth. The sixth revision marked a very decided advance on any of the previous revisions. It can truly be said that with the sixth revision a new epoch in pharmaceutical revision opened in this country. There is no doubt that the present "United States Pharmacopeia" is as much in advance of that of the seventies as surgery of the present day is in advance of the time indicated. The policy of the Committee on Revision is to place the "Pharmacopeia" well abreast of any issued.

The "United States Pharmacopeia" is the only recognized standard as to the purity and strength of all drugs, chemicals and pharmaceutic preparations.

In an age of polypharmacy when purity and quality in therapeutic agents is often sacrificed to elegance, it is necessary that a standard be adhered to. Inasmuch as therapeutic agents conform to the standard, will the science of therapy be benefited? It is the multiplicity of standards or no standard at all which renders advancement in the science of medicine exceedingly difficult in this country.

A new line of therapeutic agents has been used in this country quite extensively for many years: The German coal-tar preparations. They have been refused entry in the "United States Pharmacopeia" because they are maufactured under patent processes; however, many men think they ought to be given a place in the "Pharmacopeia" and made to conform to a certain standard of purity. Furthermore, serum therapy is becoming prominent, and would it not be about time that all antitoxin serum against diphtheria be made to conform to one universal standard?

This Committee is gathering material for the next revision of the "United States Pharmacopeia" and would be much pleased and thankful to you to receive your aid. By answering the questions inclosed herewith you will lend your valuable aid. Any of the questions which you do not wish to answer you can leave blank. With assurance of highest esteem.

Yours very truly, G. H. CHAS. KLIE, M.D.

The postal card accompanying the letter had ten questions printed on it with sufficient blank space to answer yes or no. But very many of the answers are not confined to these monosyllables and assume more the character of a commentary. Of the 1500 cards sent out, 311 or 20.6 per cent. were returned with all or more or less of the questions answered; 207 of these had signatures; 104 had none.

Question No. 1, The United States Pharmacopeia, Is it your Standard? was answered by 300. No answer was given by 8, and 3 were non-committal. Of the 300 affirmative answers 277 are "Yes"; 3 say "Yes, also National Formulary"; and 6, "It is." One each gave the following; "It is, except additions of new proprietary remedies that have become standard on continent." "Partly." "In part." "Yes, partly." "Sure." "Most certainly." "It is excellent." "Yes, to a certain extent." "Yes, so far as it goes." "Generally." "So far as it meets demands." "Very good, United States Dispensary mine." "Yes, if I have any." "In general, yes." "Yes, if it still continues as it is." "Yes, unless otherwise designated." "Yes, no." "No, the general and lamentable incompetency of average country druggists forces doctors to ready-made remedies." "Prefer German."

Question No. 2, Do you Recommend Changes? brought a total of 153 answers; affirmative 85; negative 49; non-committal 19; no answers 158. Some say, "Yes, all latest." "Yes, some." "Yes, in the hands of those that are practical." "Yes, such changes as mark the trend of progressive therapeutics." "In keeping with the times, yes." "Yes, simplify as much as possible." "Yes, more uniformity in therapeutic strength of tinctures that the dose of one in quantity may be the same with all." "Yes, additions possibly omissions." "Some additions." "Any change that is good." "Such as

are necessary." "This is a progressive age." "Add new remedies." "Such as Committee may deem wise." "Keep up with progressive advance." "Revision right up to date." "Sure, Apothecary's weights and measures." "Only those necessary to keep up with the advances made." "Only such as are new." "Additions no changes." "Make it more American." "Dosage should be given." "Give maximum also minimum dose, also frequency of dosage." "It should be more elaborate and be in two volumes." "Only such as are necessary from further experience with any drug or preparation omitting such information as may be useless or obsolete." "I shall be glad to see the time come when the 'Pharmacopeia' has only to do with the regulation of strength of tinctures, extracts, fluid extracts, simple solutions and strength and purity of chemicals; would judge the time has come for doctors to write their own prescriptions and not Brown mixture, Dewee's carminative, etc." "Leave that to Committee." "No preparations of different potencies should be allowed of any one drug. Equivalent doses of tinctures, fluid extracts, the solutions of respective alkaloids should be mentioned." "I request that manufacturing chemists be requested to put minimum and maximum doses upon every package sent out." "I think there is room for improvement in all these particular directions and in others also." "Let well enough alone."

Question No. 2, *a*, Additions. The total number of answers was 94; affirmative, 81; negative, 13; no answers, 217. Additions suggested were, in part: "Antipyrin, phenacetin, antitoxin, acetanilid." "Add some of the coal-tar preparations that can be tested for purity." "German coal-tar preparations, salol and some others." "Tuberculin and antitoxin." "Acetanilid and acetanilid compound." "Dangerous dose in black-faced type." "Keep up with present advancement, add to or drop as proved successful or worthless." "Compel all druggists to dispense from one formula." "Scientific prescriptions." "Should embrace every useful article." "A complete dissertation on urinalysis." "More concerning medical properties." "Give more space to physiologic action and therapeutic indications of drugs and remedies." "Give both systems of measures." "All new remedies that are good." "Reliable and established new remedies." "New drugs." "New drugs when tested." "Proprietary remedies that have become standard in continent." "Table of dosage for different ages." "Thyroid extract and organic iron compound." "Salol, salicylate bismuth, coal-tar preparations, diphtheria antitoxin, etc." "Alkaloids and active principles." "Syrup of compound licorice powder, elixir or syrup salicylate of iron, also liquid or sodium phosphate." "Palatable fluid extract cascara and also palatable preparations for disguising quinin preparations." "An aqueous tincture of cannabis indica, T. chinoidin, liq. ammon. anisati." "Echinacea, formaldehyde, hydrogen peroxid, codein, thujah, ichthyol, ferri et titanium comp., eucain hydrochl., glouvin, apiolin, papoid, arsenauro, calauro, mercauro, antifebrin, strophantus, sulph. spartein, cocain, methyl chlorid." "Vaselin." "Yes, e g., fl. extr. euphorbia pilulifera, terpinol, colchicin and some of new hypnotics." "Very few, substitute fluid extracts for tinctures." "The 'United States Pharmacopeia' should have a preparation similar to the syrup hypophosphit. comp. of the 'National Formulary,' but containing more quinin (gr. one-tenth), and strychnia (gr. one-fiftieth to the drachm). We need a preparation of this kind to take the place of Fellow's syrup hypophos. which is prescribed so much, but should not be, as its formula is not given fully, therefore it should be considered a patent medicine." "Orrhotherapy and a description of the different antitoxins, the amount to be used for children of different ages, minimum as well as maximum doses, should have a prominent place in the 'Pharmacopeia'."

Question No. 2, *b*, Omissions. The total number of answers was 61; affirmative, 28; negative, 31; non-committal, 3; no answers, 250. Of the 27 affirmative answers, 6 say, 'Yes." Others say: "Leave out the metric system." "Old and obsolete remedies and mixtures." "Lard." "Decocta, emplastra, arnicæ—belladonnæ, ferri et picis Burgund, etc." "Tinctures from all except gum resins and iron." "All tinctures of which there are fluid extracts." "Devote less space to the history and description of drugs and make everything as practical as possible for the busy doctor." (This doctor writes in red ink across the card: "I am decidedly opposed to polypharmacy, substitution and drug counterfeits.")

To question No. 2, *c*, Changes in Formulæ or Manipulations, etc., total number of answers was 59; affirmative, 23; negative, 20; non-committal, 6; no answers, 252. Of the answers some say: "More tincture from solid extracts." "Both." "All should be metric." "Make remedies more palatable." "Use no foreign terms." "All fluid extracts to represent minim for grain of crude drug in therapeutic effect."

To question No 3, If the "United States Pharmacopeia" is not your Standard what is your Standard? Three hundred acknowledge it as their standard, and 8 give no answer; 2 give no standard, and 1 says he prefers German.

To question 4, Shall the "United States Pharmacopeia" give Maximum Doses? the total number of answers, was 291; affirmative, 264; negative, 23; non-committal, 4; no answer, 20.

To question 5, Do you Prescribe Proprietary Remedies? the total number of answers, was 294; affirmative, 178; negative, 116; non-committal, 2; no answers, 15. Some say: "When they are definite compounds such as coal-tar preparations." "Some coal tar combinations." "Those that are prepared specially for the medical profession." "Can not always avoid it in the case of new chemic agents, or important new pharmaceutic products or combinations requiring skilled manipulation" "The prescribing of proprietary preparations is objectionable. Shows a lack of acquaintance with the 'United States Pharmacopeia,' but also with the art of prescribing, and is therefore a *testimonium paupertatis*, so to speak, on the part of the physician. In order to check this tendency to prescribe proprietary remedies on the part of the physicians, it might be well to teach physicians how to prescribe nauseous medicines, and to refer at the conclusion of the description of the remedy, to the different ways in which that particular remedy may be given in order to render it less objectionable to the patient." "Rarely, and am ashamed each time I have prescribed them. They are only fit for lazy physicians and quacks."

Question 6, If so, Why? The total number of affirmative answers to question 5 is 178. Of these 147 give reasons why they prescribe proprietary remedies. The total number of negative answers is 116. Of these 10 give reasons why they no not prescribe proprietary remedies. Of the affirmatives, 29 give "convenience" as the reason; 33, elegance, superiority, palatability, agreeability, brevity, adaptability, applicability, uniformity, neatness, usefulness, readiness, discovery, combination, placebo. Forty-one give as reasons: Good results, good effects, beneficial, do my patient good, satisfactory, available, eligible, handy, excellent, valued, useful, suitable, necessary, supply a long-felt want, fill the bill. Eight give as answers: Are better and more accurate; answer modern requirements; many are scientific; formulæ are scientific; are pure and up to standard; made in well-equipped laboratories; made with ample facilities and scientific care. Some refer to the "Pharmacopeia" and to the druggist as follows: "Because their appearance is less repulsive than when prepared by pharmacists." "There is nothing I can find in the 'Pharmacopeia' to take its place." "Many of the official drugs of the 'Pharmacopeia' are less reliable." "Only when pharmacopeial drugs can not be compounded in palatable form by druggists." "Right manufacture is expensive and druggist can not do it."

To question 7, "Shall coal tar preparations, as antipyrin, phenacetin, acetanalid, *et id omne genus*, secure a place in the

United States 'Pharmacopeia'?" the total number of answers was, 298; affirmative, 238; negative, 60; non-committal, 5; no answers, 8. Some answered: "Yes, they have come to stay." "Yes, in proper hands valuable." "Yes, with due discrimination." "Yes, where nature and mode of manufacture is known." "Yes, if they can be sufficiently defined." "Yes, the most important ones." "Yes, acetanalid only." "No, except antifebrin." "If they do only in an appendix." "Not without formulæ." "Not till we know more about them in every way."

To question 8, "Shall antitoxin serum be given a place in the United States 'Pharmacopeia'?" the total number of answers was 293; affirmative, 224; negative, 69; non-commital 5; no answer, 13. Some say: "Pehaps so, although I do not consider it as reliable a remedy as some do." "Antitoxin serum will probably not be used ten years hence, but while it is used the manufactory should be watched." "Yes, especially diphtheritic." "Yes, if it can be sufficiently defined." Yes, one standard." "Not till its value is fully and definitely determined." "No, druggists should keep on hand and dispense closed packages." "No, unless more exactness is obtained." "Emphatic—no. Classify them as poisons and place with their class."

To question 9, "Shall fermented and distilled liquors be dismissed from the United States 'Pharmacopeia'?" the total number of answers was 287; affirmative, 67; negative, 220; non-committal, 2; no answer, 22. Some said: "Yes, except alcohol." "Yes, as I consider them very seldom indicated and very often used improperly." "So far as possible they should." The two non-committals give interrogation points as answers.

To question 10, "Are you in favor of introducing the metric system in prescribing?" there were 301 answers; affirmative, 138; negative, 163; non-committal, 4; no answers, 6. Some say: "Yes, but not discarding the old while our people continue to think in $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, etc., instead of $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{100}$, etc." "Yes, when done by an act of Congress, for it is of the utmost importance, and to avoid mistakes." "Yes, if made universal." "Yes, for all except grains and fractions thereof, *i. e.*, no decimals." "Yes, if made compulsory by law." "Yes, I think it the most correct system." "Yes," think both should be given in the United States 'Pharmacopeia'." "Yes, both systems should be used." "Decidedly. As I am an American and our system suits me; let others come to ours if they so desire." "It should be optional for a time, but certainly would be best, and no doubt will be fully adopted." "Established it in the St. Louis City Hospital many years ago. Have used it exclusively ever since 'in practice'." "I have never been able to see any great advantage in it." "Not to the exclusion of the old system." "Not until generally used by law of Congress." "Hundreds of physicians do not understand it and would cause many serious mistakes. All who desire can use it anyway. Therefore leave the old system in vogue and all will be pleased." "No, errors in dispensing would be multiplied by use of the metric system." "No, English for Americans." "No, America good enough." "No, no, it's un-American." "No!!! Be Americans and for God's sake quit aping other nations. It's no more scientific than our own." "Not to make it compulsory upon the physician or to exclude the use of the old weights and measures." "No, I am in favor of more light being given the intelligent public than now obtains. There is far too much empiricism." "No, but the system should be given and taught in our schools."

Lamaistic Practice Among the Mongols.—A French army surgeon, J. J. Matignon, resident at Pekin, has given an account of Mongolian medicine, based on information received from a native who was for a time physician to the living Buddha of Ourga, an important town some 800 miles northwest of the Chinese capital. Medicine among the Mongols is a monopoly of the Lamas. There is a school of medicine at Ourga, where, after a prolonged course of philosophy and Buddhist theology, three years are given to the study of the art of healing. Mongolian medicine is largely derived from Chinese and, through that, from European medicine as it was two centuries ago. The European strain comes from the old treatises translated into Chinese by the Jesuits in the reigns of the Emperors Kien-Long and Kan-si. Mongols do not dissect, and their knowledge even of the position of the internal organs is vague. The number of diseases is fixed at 440. Works on medicine are very numerous, the chief one being a kind of encyclopedia, entitled "Khlantap," which is divided into eight sections and consists of 156 chapters. Their methods of physical examination are full of marvels. Thus more than seventy varieties of pulse are described. The urine is examined with great minuteness in respect to its color, smell, and clearness, samples passed at many different hours of the day being used. It is also subjected to a kind of auscultation, being beaten with a wooden spatula, and the vessel then quickly applied to the ear. In the case of rich patients the examination is made more thorough by tasting, a procedure which naturally is made the ground of a special charge.

Mongols, like practitioners of former days in Europe, profess to be able to diagnose and treat all sorts of cases on the strength of an examination of the urine alone. The treatment is largely internal, and their pharmacopeia is mainly composed of vegetable substances. Every year, in September, the students make excursions under the direction of their teachers, for the purpose of culling samples, which are dried, classified and catalogued. Aromatic plants, such as cinnamon and benzoin, play a large part in their thereapeutics. Animal and mineral substances are also used, but to a much less extent. The Mongol doctor carries his drugs about with him. Each medicament, dried and triturated, is put into a small leather bag, which is properly labelled; some practitioners carry as many as three hundred of these bags enclosed in a larger one, or in a box with a spoon to measure the doses. Like the ecclesiastic physicians of the Middle Ages, the Lamas are forbidden to practice surgery, although in cases of crushed limbs or other severe injury necessitating amputation, they may direct a butcher how to use a knife. They practice venesection, however, use poultices for the maturation of abscesses, and vigorous massage for the relief of headache and other pains. Recent wounds are dressed with lichen of the steppes or with deer fat. They use counter-irritation by moxas, acupuncture and ignipuncture, and they practice wet-cupping by means of ox-horns.

Preparations of sulphur and lead are used as applications in diseases of the skin, and bathing in hot sulphur springs, in syphilis. Fish's bile is credited with the power of curing cataract. Human bile, and that of the bear and of the hyena, also frequently enter into the composition of their medical preparations. Mongol doctors seek to restore vigor to old men by the internal administration of ram's testicles. "Organotherapy" is also employed. Thus, the flesh of the sheep is given for vertigo, that of the antelope for diarrhea, that of the water-rat for nephritis and dropsy, that of the marmot for dysmenorrhea, that of the beaver for spinal disease and impotence, that of the wolf in diseases of the stomach. They are acquainted with the parasiticide properties of mercury, and use it to destroy the vermin with which their countrymen are generally infected. The most prevalent diseases at Ourga are syphilis and skin affections, but typhus, typhoid, malaria, and other fevers are very common. In treating fevers they purge with rhubarb, and when that fails they give enemata or suppositories, the latter being composed of salt and sugar. They also give nux vomica sudorifics, and ginger, and juniper is burnt round about the patient. Cholera is treated chiefly by acupuncture under the nails, on the tongue, and around the anus; and as a last resource by burning the pit of the stomach.

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SATURDAY, SEPTEMBER 10, 1898.

CONCERNING THE IODIN REACTION (FLORENCE'S REACTION) WITH SEMINAL AND OTHER FLUIDS.

Three or four years ago FLORENCE[1] of Lyons secured a peculiar formation of crystals when semen was brought into contact with concentrated solutions of iodin. While he failed to find this reaction in other fluids from the human body and in semen from animals, he nevertheless wisely refrained from claiming an absolutely diagnostic importance for these crystals. He looked upon the crystals as indicating the probable presence of semen, and that in such cases one should look so much more carefully for the absolutely positive evidence, namely, the presence of spermatozoa.

The medicolegal importance of demonstrating that stains are due to seminal fluid is of course very great. The investigations of FLORENCE were painstaking and extensive, and his results have received abundant corroboration. In America, W. JOHNSTON and WHITNEY[2] have studied the reaction extensively. RICHTER[3] tried all the substances which are demonstrable in the semen, and obtained the iodin reaction only with lecithin and cholin. He also found the reaction occasionally in decomposing body fluids, and expressed the suspicion it did not concern any specific body but the presence of lecithin and cholin.

GUMPRECHT[4] has attempted to more closely demonstrate the chemic nature of the body which leads to the formation of the crystals.

[1] Arch. d'Anthropol. Criminelle, 1895 and 1896.
[2] Boston Medical and Surgical Journal, 1897.
[3] Wiener Kl. Wochenschr., 1897.
[4] Centralbl. f. Path. Anat., 1898, Nos. 14 and 15.

The technic of FLORENCE'S reaction is very simple. The solution consists of water, 30 parts; iodin, 1.65 parts; potassium iodid, 2.54 parts. Other iodin solutions do not give as constant results. The reaction is produced under the cover-glass. The drop of iodin solution is placed upon the slide; a drop of spermatic fluid, or a watery extract of a suspicious spot, is placed near by, and then the cover-glass is so placed that the line of contact of the two fluids meets near its center. At the point of contact of the two fluids there is immediately formed a layer of granules and crystals. The crystals are in reality of a long, rhombic form, about three times as long as broad. Sometimes they are much longer and look like needles. These crystals are brown in color.

The most important peculiarity of the crystals is their dichroism. They separate polarized light in their long axis, but allow it to pass through in their transverse axis. The slight polarization of the reflected light from the mirror or the microscope is sufficient to enable one to recognize this characteristic optic phenomenon in connection with many crystals: dark color when the long axis is placed parallel with the entrance of the light, and light coffee-brown color when the long axis is placed transversely to the direction in which the light enters the field.

The substance in question was found to be soluble in water, alcohol, ether and chloroform. Lecithin resembles this body in its solubility, and GUMPRECHT corroborates the fact demonstrated by RICHTER that lecithin gives the reaction. But lecithin nevertheless differs from this body in the semen in so far as it is not soluble in water, but only swells up, and also in the fact that it is precipitated by chlorid of cadmium. It was further found that fresh lecithin mixtures did not give the reaction, so that it seemed only natural to suppose that the body is not lecithin itself, but a derivative of that substance.

Further experiments showed that in all probability the body which caused the reaction is very closely related to cholin, which can be derived from lecithin. Lecithin is ubiquitous, and it therefore seemed peculiar that a derivative of lecithin should be found in the spermatic fluid and not in other tissues. The explanation of this problem is to be found in the degree of disintegration of the lecithin and in the concentration of the fluids. GUMPRECHT found that a whole series of human tissues and secretions give the iodin reaction very beautifully as soon as the splitting up of the lecithin takes place and the solution becomes sufficiently concentrated from evaporation. He therefore reaches the conclusion that this reaction is dependent upon a certain period or step in the lecithin disintegration, and about the same period at which cholin appears.

In spermatic fluid, even the fresh, this state of affairs is physiologic, and so cholin is demonstrable by the usual reagents. In manifold other fluids and

tissues containing lecithin, the necessary splitting up of the compound can be produced artificially or through bacterial influences (decomposition). The small amount of albumin in semen in all probability favors the appearance of the iodin reaction, whereas in other fluids, such as pus, sputum, milk, and the fluid of organs, the large percentage of albumin rather prevents the reaction.

Having thus, in a measure at any rate, cleared up the reaction, it remains to examine into its medico-legal importance: fresh semen and dried seminal spots, even of considerable age, have always been found to give positive reaction; decomposed semen, as well as older solutions of semen even when not decomposed, give none or but a feeble reaction. The juice of the testicle and the contents of the seminal vesicles give no reaction; the juice of the prostate varies in its behavior. Organs from the cadaver, such as the brain, thymus, spleen, kidney, liver, often give the reaction, even very soon after death. Sputum, pus and fat do not give the reaction, except after preparatory treatment with Ba2(HO); it would seem, then, that the value of the reaction in the preliminary study of seminal spots can not be denied. Its value in the positive as well as in the negative direction becomes, however, somwhat limited on account of decomposition, which may destroy the reaction in the seminal fluid, and which may produce the reaction in other organs and fluids of the body. Furthermore, there are very many other substances outside the body, such as plants, butter, and eggs, which in a decomposing condition, may give the reaction, and this would seem to be the greatest weakness of the test, because butter, eggs, as well as various vegetable substances, often give rise to spots upon clothing, a fact which should never be lost sight of in studying suspicious stains.

BRACES IN SPINAL CURVATURE.

What greater mistake can there be in medicine than that of fitting a brace to a child suffering from spinal curvature? Yet this very mistake is repeatedly made by both physician and instrument-maker, to the extreme misfortune and permanent deformity of the child. There are in medicine and surgery a number of conditions which are hidden from observation and palpation, perhaps they are further obscured by a feeling of uncertainty in the anatomy of the part, and at no time in the course of the disease can we see, feel or measure in millimeters the exact extent of the lesion. The physician will invariably draw down the curtain of obscurity before such a case, lose his clearness of vision and make haphazard thrusts at both diagnosis and treatment. Such a region is the spine. It is very difficult to examine the spine, the part that is usually diseased (the body of the vertebræ) it is impossible at any time to palpate, and nerve symptoms are characteristically confusing. In an uncertain case of skin disease we may make a diagnosis of eczema and be correct in a large percentage of cases, but in diseases of the spine we *may not* make a diagnosis of tubercular caries because it likewise is a common affection of the spinal column. The two conditions of tubercular caries and spinal curvature differ so widely in their causation, symptomatology and treatment that each must have a clear-cut picture in our mind when examining spinal cases.

Tubercular caries is a condition of osteomyelitis of the bodies of the vertebræ caused by the presence and growth of the tubercle bacillus. There is a progressive destruction of the supporting column of the body and an invariable train of symptoms must follow. These symptoms are, briefly: a reflex rigidity of the muscles to fix the affected region; pain in the distribution of the nerves emerging from such vertebral segments; pain on motion, preventing the child from stepping hard or jumping; fixation of the spine; the child holds to furniture as it walks around; angular deformity in an antero-posterior plane; lastly, abscess and paralysis from characteristic features of the later stages of the disease. While no age or class of children is exempt from spinal tuberculosis, it is found most frequently in poorly nourished children between the ages of three and ten years.

Lateral curvature of the spine, on the other hand, is, as a rule, not a disease of the vertebræ, but a lack of symmetry between the two sides, with a rotation of the bodies of the vertebræ on a vertical axis. The causes of such a condition possess such decided importance, and are best divided into predisposing and exciting causes. The predisposing causes are prolonged ill-health, rapid growth and rickets, occurring in girls between 12 and 20 years, while the exciting causes may be a one-sided position at school, a faulty position in standing, an obliquity in the pelvis, and it would seem from the fact that it is usually right-sided that a hypertrophy of the muscles on this side acts as a prominent factor. The symptoms of this disease are likewise at variance with those of Pott's disease. The first symptom is noticed by the dressmaker, who finds it necessary to pad one shoulder. She observes an "angel wing" (a prominent scapula) or a high hip, and very soon a prominence of the ribs on one side appears because of a rotation of the vertebræ on their vertical axis. At once a lack of symmetry is produced between the two iliocostal spaces, the one deep, the other long, and an S curve made by the spinous processes completes the picture. There is no pain at any time, no tenderness on pressure, no fixation of the spine; the curvature is always lateral and paralysis or abscess never appears. The one point that these two conditions have in common is the involvement of the spine.

What folly, what total lack of reason it would seem then, to put a splint on a weak muscle! The fault is entirely one of nutrition and development. The ligaments are lax and insecure, the muscular development

on one side is greater than that on the other, and a natural result from such inequality of forces will be a shortening on the side of greatest muscular power. When the condition is once established, the added leverage only serves to increase the deformity. Indications for treatment are positive. An out-door life in a tonic atmosphere, regular hours for eating and sleeping, baths, no apparatus and systematic gymnastic exercise prescribed by a physician, represent the measures best calculated to give results. Apparatus only defeats the objects of the treatment in a great majority of cases, by preventing development, and apparatus, no matter how skillfully constructed, can not correct a deformity of this kind.

THE CURABILITY OF EPILEPSY.

Epilepsy, which is commonly treated of as a spinal disease in the text-books, is also there usually considered as a curable one, at least to a certain extent. Practically, however, well-marked cases in adults are commonly estimated as incurable, and there are neurologists who seem disinclined to admit even the small percentage of recoveries that others allow as possible. Dr. WHARTON SINKLER, for example, in a recently published paper, appears to take the ground that a suspension of epileptic symptoms for a term of many years is to be considered rather as a remission than a cure; in fact, he apparently considers it hardly justifiable to put down any case as cured. He has collected a series of twenty-four cases altogether, in which the epileptic symptoms failed to reappear for various periods ranging from two to twenty-nine years, including eight cases in which they were lacking from five to nine years, and four cases of even longer intervals. The surprising feature in his figures is that they do not include a larger proportion of cases with the shorter intervals of two and three years, which it would appear ought to be more common than those of the longer periods, and this suggests the possibility that these latter include some of those instances that are not so infrequent after all, when a single epileptic attack, or possibly a series of such occur at a certain time in an individual's life, it may be under some special toxic influence or condition of mental or bodily over-strain, and then fail to recur, perhaps for the remaining period of his existence. Almost every one, it would seem, who has had large experience with epileptics ought to have met with some of these cases, and it is not uncommon even in asylums, where the patients are under close observation, to meet with cases counted as mild dements in whom an occasional epileptic attack occurs at intervals of several, or possibly a number of years. Such cases are not commonly considered as cases of cured epilepsy, or sometimes are hardly reckoned among the epileptics in the classification of the institution. There are still other cases known to asylum physicians, where epilepsy has passed into chronic insanity, sometimes of the delusional type without any pronounced dementia, and which has continued for many years, indeed through the whole remaining life of the patient without any epileptic symptoms whatever.

When we consider what epilepsy really is, viz., a symptom or a collection of symptoms of cortical irritability or excitability, in all probability dependent upon a very wide range of pathologic conditions, from irreparable organic changes on the one hand to slight vasomotor disturbances from various causes on the other, there seems to be no good *a priori* reason for holding it to be invariably incurable. It would appear, indeed, more reasonable to admit that what is pathologically indistinguishable from epilepsy that undergoes recovery should be classed with epilepsy, and that well-marked cases of the disorder may therefore be counted as curable. The infant's cortex is particularly unstable; it may be irritated to the extent of producing general convulsive phenomena with every symptom of epilepsy in the adult, and yet its recuperative power and developmental possibilities are such that it does not by any means follow that infantile eclampsia implies later epilepsy. They are practically the same thing, and the distinction that is made between them is a purely arbitrary one based on the fact that one is recovered from, while the other, as a rule, is not; there is certainly a logical defect in every argument for the incurability of epilepsy founded upon such a distinction as this. In children past the age of actual infancy the progress of epilepsy is still relatively favorable, and most practitioners of experience with nervous diseases have had cases in such that they felt justified in considering as cured. The more complete the development of the brain, the more serious is the prognosis as a rule in the disorder; it is true that we do not often meet with a cure of so-called idiopathic epilepsy in the adult, and yet it would be unjustifiable to say that it does not sometimes occur. The question is what we shall call a recovery; according to Dr. G. M. HAMMOND, in the discussion of Dr. SINKLER'S paper in the American Neurological Association, a complete absence of epileptic symptoms for the space of three years ought to be reckoned as a cure, and any subsequent recurrence should be considered as another attack from a different cause. There is reason in this, though others might demand a larger interval of freedom from symptoms; it is usually little more rational to call such an occurrence in epilepsy a remission than it would be to say that the interval between a first and a second attack of pneumonia, for example, is a remission. The morbid excitability of the cerebral cortex, of which epilepsy is a manifestation, once allayed, the patient is practically well, and there is no inherent presumption against the permanency of the recovery. If external irritation could be avoided the cures would be more numerous, but the continuance of an even slightly greater susceptibility to excitation than is exactly

normal renders a relapse the more possible. In a certain proportion of cases, not a large one it is true, there undoubtedly is a restoration to an approximately normal condition, and there is reason to think that in a smaller proportion the morbid process may produce an obtunding instead of an aggravation of the excitability thus tending to dementia or insanity without characteristic epileptic phenomena. In the majority of cases, however, the epileptic symptoms continue in spite of the brain deterioration and the disorder is accounted as incurable.

The proportion of actual cures of epilepsy is small. Dr. JOSEPH COLLINS estimates it, however, as high as 5 per cent. under proper and steady treatment. When we take into account the juvenile cases this is probably not too large, and if we include infantile eclampsia in epilepsy, not large enough. Add to these the cases where only one or two attacks occur in a lifetime and the patient survives them many years, even without treatment—and there are many such cases that hardly come under the care of physicians—and the proportion is still further increased.

It is beyond question that there is a risk of too early estimation of cures in epilepsy, but three to five years' freedom from attack ought, it would seem, to justify the counting a case as recovered. Post-operative cures are in fact very commonly reported far within such a length of observation, but they ought to be subject to the same rules as to interval and observation as others, and will not be likely to alter the statistics in the way of making them any more favorable. Organic disease and serious developmental defects are probably responsible for the majority of epilepsies, but there remains a proportion that are probably due to conditions that are themselves not altogether incurable, or are at least amenable to treatment, and in these there is at least a possibility of cure. Still others are due to temporary intoxications or overstrains, and if there be not irreparable damage set up they may even undergo a spontaneous cure which may escape medical observation. The dictum of the incurability of even adult idiopathic epilepsy is, therefore, not fully warranted by observation or based on well-established pathologic facts.

THE CHAIR OF PHYSIOLOGIC CHEMISTRY IN MEDICAL COLLEGES.

What produces the symptoms of epilepsy, of hysteria, of gout, lithemia, uremia and rheumatism? What is the nature of antitoxin and how is the morbific agent of acute infectious diseases destroyed by its action? We are beginning to know something about pathology, therapeutics, and physical diagnosis, and we know a great deal about anatomy, surgery and bacteriology. A system of diseases has been built up from the knowledge of micro-organisms. We have reached that point of knowledge in bacteriology, where it becomes possible to extract wax from the tubercle bacillus, to stain its spores and the flagellæ of the bacillus icteroides Sanarelli. We believe that typhoid fever is due to the Eberth bacillus and that its introduction into the small intestines gives rise to manifold symptoms. But we do not know to what all these symptoms are due. When there is a disturbance of the metabolic activity of the liver, of the pancreas, of the stomach and small intestines in typhoid fever, a complex condition supervenes and it may be an open question whether the toxin given off by the specific organism is in the ascendancy or whether the other ptomains together with leucomains play the principal part. If we start out with the proposition that the symptoms of hemicrania, lithemia and asthma are due to uric acid, and the symptoms of uremia to members of the creatinin group of leucomains, we again meet with extreme difficulty in proving the proposition by exact experiment.

In the United States two conditions confront the original investigator at the outset: 1. There are few laboratories fitted for this work and, 2, there are comparatively few competent to instruct in chemistry from a physiologic standpoint. In Germany, where institutions for original research are aided by the Government, and where men are guaranteed a certain income or salary to conduct one series of observations, we necessarily hear a great deal of the "Congress für innere Medicine," and of "internal medicine," during the summer and winter semesters. The migration of medical students to the old world can not be effectually stopped until the teachers in the colleges of North America write the text-books used by those across the water.

In our rapid stride, searching for the cause of disease, the department of bacteriology has been pushed with extreme vigor and we become discouraged on further inquiry to find that the cause for the many symptoms of disease lies hidden within a labyrinth of physiologic and chemic problems at present beyond our comprehension. The United States does not lack investigators in these problems. There are thousands of younger physicians here eager to undertake this work if they only had the training and the opportunity. The time has long since passed when, by simply injecting hypodermatically a certain drug, one could ascribe certain definite symptoms as the resultant. We have passed beyond that stage, and things are now on a surer foundation capable of withstanding the flings of unrelenting criticism.

If we should take an inventory of the different medical colleges in this country in which there is a department of physiologic chemistry, we would find that there would be comparatively few fitted for giving proper instruction in this department, notwithstanding a four-year course is a prerequisite for graduation, and for which necessary expense the student, be it said, should in return get value received. The student can not undertake these experiments alone. His mind

must be under the supervision of one fitted to detect the occluded sparks which lead toward the hidden goal. Another thing: Those who would undertake to conduct original research in internal medicine, more especially with leucomains for instance, must not be surprised that these all-important bodies can not be purchased in the open market, and that in order to get a few grains of them the first prerequisite is to secure from fifty to seventy-five gallons of urine. Truly it must be said that in our zeal for the exploration in other fields in the different medical colleges of the land, the coming study of the day lies buried in the mist which only time and necessity will brush away.

Let us have a Department of Public Health!

THE INDIFFERENT ANESTHETIST.

There is something essentially wrong in the methods of administering anesthetics when the laity begin to revolt against existing methods and prepare to dictate to the anesthetist how he shall administer an anesthetic. During the past few months the *Nineteenth Century* has contained articles condemning certain existing methods of administering chloroform in England, and that of June concludes as follows: "Let each one of us refuse resolutely to take chloroform or allow any member of our family to take it without first obtaining a guarantee from the anesthetist that he will administer it in an open cloth held at a given distance from the nose and that the time taken to put us under shall not be less than eight minutes." There is a further proposition that the violation of any one of these rules be an act punishable by law.

The mind of every medical man must needs revolt against the layman dictating methods to the profession and presuming to say that he shall do his business in this way or that. Disagreements among doctors as to diagnosis, prognosis and treatment in a given case have done far too much already to give the layman an incredulous mind and furnish him with grounds for criticising the physician in charge because he does not agree in his methods with his (the patient's) preconceived ideas of the proper conduct of the case. This attempted dictation as to the administration of chloroform would call for an answer that would confine itself to a dignified request to "mind their own affairs," were it not for the fact that there is a great fault just where the criticism falls, and justice does not permit us as medical men to ignore it within the profession. The "stiflers" among anesthetists are made the point of attack, and a visit to many of our hospitals will demonstrate just what is meant by the term. The fault in this country is for the most part limited to the administration of ether, where the most inexcusable indifference to the patient's comfort is often demonstrated. The man who gives the anesthetic in a hospital is regularly the youngest man on the staff, a fresh graduate with theoretic teachings alone, or the example of another interne, as his guide. The cone, soaked with ether, is crowded down over the patient's face and he makes a courageous effort to stand it for a time. Very soon, however, he struggles to save himself from what these patients afterward describe as a feeling of imminent suffocation and death, and gains a breath of fresh air only in those cases where the orderly or orderlies are unable to hold him down. When the patient is under, the anesthetist, who has given ether two or three times, wishes to demonstrate to the assembled students and spectators his entire familiarity with etherization by indifferently gazing around the room or at the field of operation, or he exchanges jokes with a bystander. This is essentially wrong and it is a wrong to be corrected by the operator himself. No operator should permit any man to administer his anesthetics unless he is competent to do so and willing to direct his undivided attention to the patient. The suffering of the patient alone is sufficient reason for the gradual administration of any anesthetic, and the dangers, immediate and remote, are sufficiently great to demand the minimum dose and the proper regulation of the dose. As long as the system of the hospital internes exists there will continue to be "swell heads," and the operator alone can remedy his fault of feeling that he knows everything about etherization.

CORRESPONDENCE.

A Defense of Music.

CHICAGO, Aug. 25, 1898.

To the Editor:—In the JOURNAL of July 23 appears an editorial upon the "Hygiene of Music," which, while judiciously advising against the abuse of the art, contains some statements that I would like to reply to. From the general tone of the article I would almost infer that the writer is one of those unfortunate, over scientifically trained individuals who, in their zeal for "utilitarianism" have lost their artistic sense. Darwin, to whom he refers as attributing the love of music to the sexual sense, clearly stated in his own writings, that though he possessed a lively artistic temperament in his youth, his constant application to science had so warped his mental faculties that in later life it was torture for him to read a great novel, and it was simply impossible for him to enjoy a line of Shakespeare. I know an individual whose sexual appetite (from his own confession) is as excessive as any I have ever heard of and yet he is absolutely deficient in the sense of music. Libertines and prostitutes are not, as a rule, particularly musical, while, on the other hand, the great composers, with some few exceptions, have led lives as virtuous as the average. If music is the "food of love," and love is to be reduced to mere sexuality, it can rejoice at least in being in good company in its misery. Some scientists reduce man to two appetites, the sexual and the alimentary; and accordingly love, friendship, dancing, music, Christmas-merry-making, and about everything in life that gives enjoyment is an offspring of sexuality or gluttony. *Honi soit qui mal y pense!* Weissmann (quoted in the editorial) thinks the musical sense is "abnormal," which is indeed a very consistent conclusion to reach after the teachings of Darwin, that music is so innate that it is even related to the love-notes of the birds. Alas!

how science does wobble when it attempts to dissect the *beautiful*, or that which is not strictly *utilitarian!* If the sense of music be abnormal, then how many abnormal people there are in this world of ours. Perchance the birds and some of the tamer animals that reveal at times a kind of musical sense are also abnormal. The clergy tell us that there will be music in heaven, but who would want to be in heaven if it is to be abnormal? Would that the "abnormal" Darwin, if he is so unfortunate to be now where there is music, would only come to the theorizer about heredity, so that for the credit of "science" a better consistency might be obtained between their present hopelessly divergent views, for our logic is inadequate to reason out the harmony between the theories of these men "whose opinions," the editorial writer shows, "are best worthy of respect." If, as Weismann says, "music is a secondary effect on the organs of hearing induced by cultivation," how, pray, does it happen, as Darwin said, that it is a concomitant of sexuality and "analagous to the love notes of song birds." It seems to me somebody's opinion here is *not* "best worthy of respect." It has been agreed by the evolutionists that, in the development of the human race, the musical sense, of all the senses, is the last to have been acquired. If my memory serves me, I think they state that it is about thirty thousand years old. Surely what the human race has possessed for thirty thousand years can not by this time be so awfully abnormal! The same evolutionists have calculated, I believe, that about 47 per cent. of human beings are lacking in the musical sense. Therefore, I take it, *a la* Weismann, that the majority, 53 per cent. must be all abnormals. Our lively and entertaining friend, Nordau, would probably rise up with a sneer and exclaim "true," for he seems to find degeneracy and abnormality quite rampant amongst us. I marvel, however, that a *scientific* editorial writer should quote Max, for after the same manner Juvenal might be made to testify that there was no virtue whatever in Rome, and Rabelais will prove that every churchman in his day was a libertine and a wine-bibber.

"Music in itself is not intellectual," says the editorial writer. Neither is a quiet stroll on the boulevard, or rowing or tennis or even sleeping, and a goodly number of other things which we do in life, and yet find more or less essential. Some things minister to the intellect, even if they are not strictly intellectual. Hear what that arch-utilitarian, John Stuart Mill, has to say about it: "the only one of the imaginative arts in which I had from childhood taken great pleasure was music; the best effect of which (and in this it surpasses, perhaps, every other art) consists in exciting enthusiasm; in winding up to a high pitch those feelings of an elevated kind which are already in the character, but to which this excitement gives a glow and a fervor, which, though transitory at its utmost height, is precious for sustaining them at other times." If intellection is so supreme a desideratum, would it not be well then for some of us to stir up our intellects with music! A]most the first requisite of intellection is imagination. One can not think without, to a certain extent, imagining; and all other things being equal, the man with the clearest insight (imagination) will reason the most clearly. Faraday, Liebnitz, Dalton, Newton, Columbus, Laplace, and nearly all the *great* scientists were men of vivid imaginations, and with some of them music awakened the imagination and from their imaginings sprung the great intellectual ideas with which they have endowed the world.

Again the editorial declares that "one of the greatest poets has said that to appreciate poetry a trace of morbid mentality was essential." Strange that the author should quote a poet, a kind of musical man, against poetry; for one would think he would not care much for what a *poet* says! As a fact, however, he is quoting Macaulay ("Essay on Milton"), who is scarcely "one of the greatest poets"; who wrote his "Essay on Milton" when he was a very young man, this being his first essay; and who, according to his writings elsewhere, never intended that his words should be construed as literally as the editorial writer takes them. If the musical faculty is "compatible with a profound degree of dementia," so is the mathematical faculty, the memory and almost every department of the mind. As an argument for the "morbid mentality" associated with the musical faculty, Blind Tom is about as weak as even the imagination can conceive of. For one Blind Tom, who after all represented not the best type of musician, there are thousands of rational beings richly endowed with the musical sense, as witness an army going into battle to the strains of soul stirring music, or a throng of people cheering for Old Glory and singing their patriotic songs. Is not that utilitarian enough and are not those people rational enough, to suit our friend, the writer of the editorial? What is after all *utilitarian* and what is *rational?* We hope he will some day give us a definition of these terms so that we may know *exactly* when we are crossing the Rubicon from the useful to the useless, from the rational to the irrational. Milton sings:

> "There let the pealing organ blow
> To the full-voiced choir below
> In service high and anthems clear
> As may with sweetness, through mine ear
> Dissolve me into ecstacies
> And bring all heaven before mine eyes."

And likewise Wordsworth:

> "Where music dwells
> Lingering and wandering on, as loath to die,
> Like thoughts whose very sweetness yieldeth proof
> That they were born for immortality."

If such be the office of music, is it therefore less "utilitarian" than the act of cooking, of buying and selling corner lots, of digging trenches and reading stock quotations? Well, perhaps it is, but, frankly, I have seen some real estate men and stock-brokers, genuine utilitarians—yea, and even some scientists—men of one idea and that a utilitarian idea—that I strongly suspected of being on the verge of a "*morbid mentality*" more than I ever suspected the whole troop of musical enthusiasts put together. I think I have even heard them talk (as for instance in reasoning about some patent medicine and its marvelous curative powers in their own cases) more *irrationally* and less *intellectually* than the great Beethoven or Mozart must have communed with themselves when evolving their sublime symphonies and concertos.

Our editorial friend has fallen into the error, too common with scientists, of supposing the merely utilitarian, the tangible, to be of the greatest value. St. Paul was a great thinker and he declared that the unseen things were eternal. So that which stirs the soul—whether it be music or poetry or painting, whatever tends to lofty ideals and noble acts—is utilitarian in the highest and best sense of the term. To be sure it may be abused and here the editorial is notably commendable in warning against the abuse of art. The readiness with which it may be abused is only another evidence of its nobility. The more delicately a watch is constructed, the more carefully it should be handled. Because we all do not understand its mechanism and because it is quickly shattered in the bungling hands of some of us, let us not condemn it as the offspring of "a morbid mentality" or as not utilitarian, or as always the outcome of sexuality and gluttony. When I listen to the depressing, materialistic, utilitarian mutterings of "science," I am inclined to exclaim with Carlyle, "what in these dull immaginative days are the terrors of conscience to the diseases of the liver! Not on morality but on cookery let us build our stronghold; then brandishing our frying-pan as censor, let us offer sweet incense to the devil and live at ease on the fat things he has provided for his elect."

L. HARRISON METTLER, M.D.

How to Suppress Quackery.

ROLLA, MO., Sept. 1, 1898.

To the Editor:—Ever since the 4th of March, 1897, when Governor Lon V. Stephens put his fist to the bill entitled "An act to regulate the practice of the science of healing diseases and

injuries without the use of drugs, known as osteopathy," and sent the congratulations by wire, of himself and wife, to the father of the imposition, praising him for "the wonderful advancement he had made in medical science," Missouri has had to confess with shame, that she is the mother of one of the grossest frauds that has ever been imposed upon the sickly and weak-minded people. This bastard to science has been advertised in the daily and weekly newspapers, and the laity has read only one side, until rational physicians are looked upon as "jealous cranks who oppose scientific progress."

I was a member of the 38th General Assembly of Missouri, when Edward Higbee introduced and championed this freak of science, known as House Bill No. 445. I had to suffer the intense pangs of seeing a large majority of the members in both houses misled by an organized lobby telling how that wonderful man at Kirksville cured sore eyes by replacing a nerve on the back of the patient's neck; how he cured consumption instantaneously by stretching the pneumogastric nerve; how he cured Pott's disease by untying the spinal cord; how he made the lame walk by pulling their legs, etc. The large vote by which this bill passed both houses only proved the ignorance of the average legislator on medical subjects; and the able manner in which Governor William J. Stone wrote his veto to it, proved that Missouri was then fortunate enough to have a Governor possessed of a good education, good judgment, love for the people, and executive ability and nerve enough to do the right, whether it be popular or unpopular. Whilst I am a Republican in politics, I do not believe that Governor Stone has received all the honor from rational physicians due him. I would like to see every honorable physician in our State keep a life-sized portrait of this able statesman hanging in his office, in token of the high appreciation of the medical fraternity for the friend to science and truth. But it is not my intention, in this article, to condemn or to eulogize any individual, but to suggest a method by which empiricism, charlatanism, osteo-hypno-humbug-ism, or any other fad or false theory calculated to deceive and swindle the sick, can be suppressed.

So long as a rigid "Code of Ethics" prevents educated and honest physicians who strive more to get knowledge of how to relieve the sick, than they do to accumulate wealth, from using the newspapers for the purpose of enlightening the people, quackery will have the advantage; for the people who can read will read, and they will read such things as they find in the newspapers. It is not necessary to state that the newspapers contain a large amount of paid-for quack advertising, gotten up for the purpose of misleading the sickly and weak minded, and after swindling them out of their last dollar, something that is easily done, when they read only one side, but will not stand the test when the truth is printed; for one word of truth can explode one hundred words of false theory, when properly applied.

The method to subdue quackery which I propose is this: Let every physician in each county in the State require his candidate for the legislature, to promise that he will vote against all forms of quackery and humbuggery, and that he will vote as advised by the leading physicians of his county and district, on all subjects pertaining to medicine and surgery. This promise should be required irrespective of party affiliations; and our party prejudices should never be so strong as to allow us to ever vote for any man who has supported quackery, or who is likely to do so.

Partisanship is one thing, and politics is another. It is the duty of a physician to exercise a reasonable amount of interest in the politics or government of his State and nation, especially for the protection of citizens in their rights, with the preservation and improvement of their morals; but he should never become a partisan to the extent of voting for any person who favors charlatanism.

Missouri has about 5000 regular physicians. This number is sufficient to resent the insults of both political parties, which have been thrust at the regular profession in the 38th and 39th Assemblies, and repeated at the Democratic and Republican State conventions recently held in Springfield and St. Louis.

If the medical press, the medical societies and the State Board of Health will take a united interest, and furnish to all physicians of our State a list of all men who have supported, or are apt to support, the fads and frauds above mentioned, and furnish a few suggestions on the subject, I think I am safe in predicting that within from two to four years' time, osteo hypno-humbug-ism in Missouri will be numbered with the slain.

The following members of the 38th General Assembly supported House Bill No. 445, introduced by Edward Higbee, entitled "An Act to Regulate the Practice of the Science of Healing Diseases and Injuries Without the Use of Drugs, Known as Osteopathy:

House.—Armstrong, Arnett, Atkins, Best, Bittinger, Bothwell, Bourn, Breit, Cape, Carroll, Cherrington, Collins, Coppedge, Carroll, Cox, Crisp, Daneri, Davidson, Davis (Taney), Davison, DeFord, Denslow, Drum, Dyer, Ferguson, Freeman, Fuson, George, Gill, Gmelich, Griffiths, Grubb, Hammond, Harrison, Hart, Higbee, Hinde, Johnston, Jones (Hickory), Jones (Jackson), Julian, Kasey, Kline, Kyler, Lane, Leroy, Lynch, McCollum, McKearley, McKee, McPherson, Marsh, Middleton, Moore (Mississippi), Moore (Stone), Moran, Mueller, Murray, O'Dell, Odneal, Old, Phipps, Porterfield, Pratt, Rohne, Sachse, Sartin, Schoppenhorst, Schumacher, Sherrill, Smith (Buchanan), Smith (Howell), Steel, Stickney, Sullinger, Swanger, Tartar, Walton, Warner, Waymeyer, Weaver, Weinhold, Wetzel, Young (St. Fran.), Young), Texas, Mr. Speaker.

Senate.—Amelung, Ballard, Bledsoe, Brewer, Busche, Davisson, Drum, Dunn, Kennish, Klene, Lancaster, Landrum, Love, Lyman, McClintic, Madison, Morton, Mott, O'Bannon, Peers, Powers, Seaber, Walker, Williams, Wurdeman, Yeater.

The following members of the 39th General Assembly supported the same bill when introduced by Mr. Pickler and Mr. Seaber:

House.—Alldredge, Armstrong, Averill, Aydelott, Barnett, Bittinger, Bohart, Bradford, Bradley, Breit, Brueur, Burroughs, Caldwell, Cashion, Christy, Clarke, Clymer, Cock, Coffey, Cole, Collins, Cox (Lewis), Cox (Oregon), Crisp, Curry, Daugherty, Davault, Davidson, Davis (Chariton), Denslow, Dougherty, Dunn, Dyer, Ehrhart, Erman, Fitzgerald, Frost, Hale, Hamilton, Hart, Hawkins, Hays, Hendrickson, Hess, Hood, Hopkins, Ijams, Jenkins, Johnson (Cooper), Johnson (St. Louis), Koch, Kramme, Lee, London, McCullom, McKim, McMonigle, McPherson, Martin (Barton), Martin (Callaway), Mashburn, Moeller, Morris, Mueller, Neville, O'Dell, O'Fallon, Organ, Pickler, Piner, Piper, Pope, Prather, Pyeatt, Rebo, Regan, Rohne, Ross, Rubey, Russell (Dade), Sawyer, Schumacher, Sessinghaus, Shewmaker, Sickles, Smith, Snidow, Spofford, Tandy, Taylor, Thomas, Truitt, Tubbs, Vanderhoef, Vandiveer, Wade, Walmsley, Ward, Weaver, Williams (Jefferson), Wood.

Senate.—Anderson, Brewster, Burkhead, Childers, Davisson, Drum, Gray, Hohenschild, Klene, Landrum, McClintic, Major, Marshall, Matthews, Miller, Morton, Mott, O'Bannon, Orchard, Peers, Powers, Schweickardt, Seaber, Vandiver, Wells, Williams.—Lon V. Stephens.

The foregoing is a correct list of both Republicans and Democrats who supported osteopathy in the two last General Assemblies of Missouri, as shown by the Journals of the House and Senate, which I desire to have printed in each medical journal in the State, and all others that are read in the State.

J. L. SHORT, M.D.

The Physiologic Approach to Education.

NEW YORK CITY, Sept. 1, 1898.

To the Editor:—Some one has said recently that there are three avenues to the approach of education, the physiologic, the sociologic and the psychologic. The college settlement and university settlement laborers are grappling with possible social reform in education; the pedagogue and psychologist with

their respective portions of the same great problem. Who will best develop and clear the physiologic pathway?

In a generation's time the aim of education has been completely transformed. In years past our boys and girls were trained for too circumscribed spheres, the one for the special trade or profession perchance selected, the other for lines far narrower, the purely domestic or social routine. Today the projectors of education are satisfied with no scheme that aims not at the development of every faculty, lurking or alert. There has been achieved great advance in the true direction, but there are also recognizable defects even in present day systems and possible threatenings of mistaken gains.

Life has been defined as the relation of incident forces and external environment. School life, educational life, follow the same law. Yet too often we see environment neglected and little heed paid to coincident forces, the result being an asymmetric development of material. A minor proportion of our children may be as carefully nurtured in their physical as in the mental growth; the vast majority are less fortunate. Go with me into any school of average size in a cosmopolitan city, where children of all grades of society commingle. They show quite alike, irrespective of social condition, too evident marks of malnutrition, of defective home hygiene, of faulty trained or neglected eye and ear, of neglected muscles, of universal errors in dress. Add thereto many faulty conditions of school hygiene, of over-crowded classrooms, ill-lighted, worse ventilated; of dark playground or of none at all; of ill-suited furniture for little aching spines and developing hips. Few large schools are found in over-crowded New York City, that are not over-topped by many-storied factories, whose noises do not aim to rise above those already hideous of city streets. Is it sweetly reasonable to expect from like environment, well-developed mental foundations?

What may be said of the incident forces? In all revisions of schemes of study of recent date, generous provision is made for mathematics, for language and literature, for music and drawing, for botany and biology. Of what use be these, if the child acquiring them be not most familiarly acquainted with himself and the laws that regulate all his efforts to acquire and attain? In truth, the course of study providing with sufficient liberality for this first great science, physiology, is yet to be discovered. Within the last two decades there was conceived the idea of its being essential to instil into growing youth a "popular knowledge of stimulants and narcotics." The intention was excellent, but its accomplishment inefficient. For the purpose physiology was introduced into the school curriculum, but in so defective a manner, and with so narrow a presentation, that the only impression produced on the mind of the irreverent student, is a frivolous regard for the "liquor books." Is it justifiable that outside of the medical profession, there should be no persistent and thorough investigation of physiologic laws and no proper presentation of them? In not half a dozen of the numerous public schools of New York City, is physiology taught by a physician. I presume this to be a fair average of similar conditions in other cities. In the medical college of the least pretension, there is a theoretic course of two years in this subject. In addition, many months of practical laboratory work are obligatory. Moreover, the entire four years' college work is a continual round of emphasis and review of the fundamental physiologic problems of the first year. All the wealth of clinical instruction now available to any student, is abounding with practical demonstration of physiologic laws. For example, the abstruse problems of blood pressure and vasomotor mechanism are solved in every case of organic disease; the trophic nerves and their function in every case of even the superficial skin lesions. Yet with all the constant iteration and reiteration of important truths, but few physicians feel qualified to aspire for the chair of physiology in their own Alma Mater. Contrast the conditions cited with those encountered in the majority of our best secondary schools, where the teaching of these same important facts to minds far less prepared to receive them, is intrusted to one who has had no more than elementary training in "Science Lessons."

I am confronted with the argument that our school children are not in training for the medical profession. I am no less sure that this fact itself makes it important that the necessary modicum of knowledge be presented by one familiar with its deepest bearings. In other details are our incident forces sadly inefficient. Too little attention is paid to the selection of proper text-books covering the sciences. So glaring are the errors found in instances, that within a month the medical society of a neighboring State discussed the necessity for presenting to the AMERICAN MEDICAL ASSOCIATION a petition for the official supervision of such books. In pursuit of such investigation no less than seven differing publications were found, each pleading guilty to positive errors of fact, or to loose and unscientific presentation of important problems. There is no work more fascinating, more interesting than that of human osteology. Yet in not one text-book is there consideration given to the wonderful architectural principles demonstrated in the physiology of the skeleton. In speaking of the chemistry of bone, custom is universal in calling the mineral matter found therein phosphate of lime; this is a loose bit of chemic inaccuracy, for lime is more correctly the phosphate of calcium. In the chemistry of the blood many are the lapses of accurate statement. In but one book have I found any attempt at satisfactory explanations of the oxyhemoglobin and its really wonderful composition and function; very many careless statements are made describing the circulatory and respiratory systems; in but one authority is it distinctly stated that the nose and not the mouth is the proper entrance to the respiratory passage. In none can I find any distinction between active and passive organs of respirations, laying full stress on the value of each. By one only, are the important vasomotor and tropic nerves studied. Assuredly there is need of reform in this "physiologic approach" to education. With the best of material, is it rational to expect an intelligent acceptance of the science within the scope of one year, and that usually a year of immaturity? Is it not worth a struggle to put within the reach of our boys and girls a scientific knowledge of the laws of life and health, to foster at least an incentive to the admonition now ages old, "know thyself?"

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53 Washington Square.

Examine Railway Employes' Eyes Periodically and in a Scientific Manner.

CHICAGO, ILL., August 31, 1898.

To the Editor:—The importance of railway signals and their correct observation by employes is a matter the subject of which has been given a great deal of study by all railroad officers, to the extent that every conceivable form of signal that genius, talent and mechanism can contrive has been tried and each in turn served the period of its usefulness and relegated to the background, the cruder machine being supplanted by a more perfectly constructed one until today our railway signals are equal in construction to those produced in any country. The medical profession has not kept pace with these mechanical students in their teachings of how to correctly observe these signals and thereby avoid accidents.

The average railway surgeon is provided with a few crude tests as to color vision and is taught how to correctly operate them by a superior medical officer totally unfit and incapable of giving such instruction, the superior medical officer in many cases being incompetent himself to pass judgment upon the interior of an eye as viewed with an opthalmoscope, therefore, since he does not know anything about the interior of an eye as viewed with an ophthalmoscope, he is unable to ferret out

the cause of the color-blindness and is unable to give advice or instruction concerning it. In this regard the medical profession has not kept pace with these railway officials in this line of study.

To correctly observe a signal means to avoid the accident and is therefore of vital importance to all railroads. Vast sums have been expended by railroad officials to attain this success in the perfection of their various signal contrivances. Why, then, should not the medical profession teach the railway men the proper *modus operandi* to be pursued in correctly observing them.

The average railway surgeon is provided with a few skeins of yarn and taught that if the employe can not ferret out the various colors, but confuses them, he is color-blind and must be rejected by the railroad officer examining him. Now these skeins are all right in their place, but there is a difference sometimes in the luminosity of these colors and in the wave lengths of the ethereal vibrations producing them, giving to the color a different hue when mixed with other colors and thereby causing the employe examined to be rejected when the color-blindness is only temporary and apparent and no pathologic condition present to produce it, and blindness which could not be again produced. Again, very many railway men have learned that they confuse red and green and that they must upon examination call red green. Here the man has a pathologic lesion discoverable, it may be, only by the aid of the ophthalmoscope or by an accurate mapping out of the color field by the perimeter, which few if any of the surgeons have, and which is equally important with color-blindness as to lesions producing it.

No man is capable of judging an employe's color perception who can not correctly survey the fundus, noting the probable cause producing it or map out his color field or make the various tests for spinal cord or brain lesions that might produce it. Very many eyes are rejected because they can not read $^{20}/_{20}$ (that is see at 20 feet what they should see at 20 feet), all this because the medical examiner does not know the healthy organ when he sees it and does not know, that it is, perchance, simply a slight refractive error easily remedied by the proper refractive correction. Moreover, very many diseases prevalent among railway men, such as syphilis, rheumatism, Bright's disease, tuberculosis, etc., not sufficiently marked to lower acuity of vision at the time of examination, which later produces total blindness in the organ, go by undiscovered by the railway surgeon and a grave accident results. The railway surgeon should be correctly instructed concerning positive and negative scotomas, how detected, and their signiflance as to the correct observation of signals. I said in a recent paper published in the *Railway Age*, that, "If any man can not read $^{20}/_{20}$, that is, see at 20 feet what he should see at 20 feet, which for practical purposes is infinity, he should not be at the head of a passenger train freighted with human lives." If he can not read $^{20}/_{20}$ and his fundus is normal, why not give him the proper correction and let him wear it. Periodic examinations by competent oculists would remedy the defects, if refractive, and ferret out the poor-sighted employes, and, where possible, correct their vision by properly adjusted glasses.

I am aware that railroad officials are loath to part with trusty employes and for that reason keep their old employes in the most hazardous positions. This is as it should be, save that if upon frequent examinations it becomes a known fact that the particular employe has diminished acuity of vision from any source unremediable, he should be substituted by a younger but equally trusty employe, whose acuity of vision can be made perfect or nearly so. I believe that the older employe with lessened acuity of vision should be given the less important positions where signals are not observed.

Another condition is that of hemeralopia and nyctalopia, night and day blindness, where an individual may see perfectly for twelve hours out of the twenty-four and indistinctly the other twelve. These symptoms are manifested in certain retinal affections, and discoverable, it may be, only by the aid of an ophthalmoscope the individual, if being examined, declaring that he sees perfectly, while the ophthalmoscope shows an acute or chronic, traumatic or albuminuric retinitis or retinitis pigmentosa. Another condition is that of tobacco amblyopia, sooner or later to affect the optic nerve by causing atrophy of it, scotoma, contracted field, color-blindness and finally total blindness of the eye. The same condition is possible by imbibing too freely in spirituous beverages. Who is to pass judgment on this condition? No one but the skilled physician who is able to survey the interior of an eye.

Very many other conditions might be cited, prevalent among railroad men, which lower the acuity of vision, and which therefore necessitate a periodic examination of all employes' eyes by competent oculists, especially employes having to do with signals. Every railroad should have a competent oculist with enough assistants to correctly examine, periodically, both subjectively and by means of an ophthalmoscope, the eyes of all employes having to do with signals. This will, if properly executed, lessen the railway accidents the first year by one-half and relieve the railway surgeons of one of the supposed functions of their respective offices. I am aware that all railways employ oculists in name, but not in fact, their supposed function being to examine the fundus of all feigners in railway accidents and pronounce them healthy eyes and to be a general consultant in case the railway surgeon accidentally suspects some fundus lesion.

Recently in a medical journal I noted an expression from a railway surgeon of note in which he claims that the employe's character is of vastly more account to the railway employing him than is his eyesight. In my judgment both should be good and no employe placed who can not demonstrate that he has both good character and good eyes. A law should be passed in every State in the Union compelling the railway companies to periodically examine all their employes having to do with signals and especially those in the train service. This would prove no injustice to any, but would be a boon to humanity in the saving of lives and a saving to the railroads in thousands of dollars spent annually on accidents.

JNO. RANSOM HAMILL, M.D.,
Ass't Surgeon Illinois Charitable Eye and Ear Infirmary.

The Association and the Colleges.

LOUISVILLE, KY., Sept. 5, 1898.

To the Editor:—In the JOURNAL of September 3, page 337, Dr. T. J. Happel, ex-vice-president of the AMERICAN MEDICAL ASSOCIATION, says: "After carefully reading the notices sent out by Dr. Wm. B. Atkinson to the deans of the several colleges in the United States, I am satisfied that the ASSOCIATION has attempted to reach a point which it should attain, in an unconstitutional manner. Had this point of order been made against the resolution at the time it was offered, as the presiding officer of the ASSOCIATION on that day, I would have decided the point well taken, and have ruled it out of order."

Dr. Happel presided on Wednesday, at the time the resolutions were offered. He referred them to the business committee. On Thursday the business committee recommended their adoption; Dr. Happel, again presiding, put the question, and decided the resolutions unanimously adopted. He was then the only person authorized to decide. He was at that time under solemn obligation to execute all the provisions of the constitution of the AMERICAN MEDICAL ASSOCIATION. He decided then as an officer clothed with full power.

It is now about three months since he ceased to be an officer,

and it is an unheard of proceeding for him to undertake, after he has passed out of office, to decide that his conduct in office was irregular, unconstitutional and void. Does not Dr. Happel know that ignorance of the law can never be pleaded as an excuse for its violation?

The resolutions are an ordinance of the ASSOCIATION, and not a constitutional amendment; and, whilst they affect the qualifications of certain persons holding membership, they are, in fact, intended merely as an addition to the by-laws.

The constitution says of delegates, and other members, that they "shall continue such so long as they remain in *good standing* in the body from which they were sent as delegates, and *comply with the requirements of the by-laws* of the ASSOCIATION;" and of the permanent members, "so long as they shall *continue to conform to its regulations*." The constitution, therefore, decides that the provisions of the by-laws are to determine the qualifications of membership, or rather, the conditions upon which membership may be continued. See Art. ix of the by-laws, entitled "Conditions Excluding Representation."

The resolution to which Dr. Happel makes reference does not alter or amend the constitution of the ASSOCIATION. It amends Art. ix of the by-laws by adding to the specifications of conduct which shall exclude from representation.

Article viii of the by-laws formerly contained this paragraph (Transactions, Vol. xxvi, page 491): "It shall be the duty of every member of the ASSOCIATION, who learns that any existing medical school departs from the published conditions of graduation, to report the fact at the annual meetings; and, on proof of the fact, such school shall be deprived of its representation in this body." The by-laws, in relation to the conditions excluding representation, have been amended so often that it would require a large octavo volume to contain all of them. The only rule with which I am familiar, concerning amendments to the by-laws, is that set forth in the first Article, which says: "the order of business shall, at all times, be subject to the vote of three-fourths of all the members in attendance."

I am sure the ASSOCIATION will enforce the provisions of the resolution; it must do so or stultify itself. The technical quibble about attempting to make the resolution appear as an amendment to the constitution is both unreasonable and absurd.

The profession of medicine can not have more than one standard of qualification. The minimum curriculum of the College Association, which has been unanimously adopted by the AMERICAN MEDICAL ASSOCIATION, is the lowest that can be accepted of any candidate for admission to the regular medical profession in the United States. The Degree of Doctor of Medicine must be of equal dignity and effect, whether conferred in the North or the South, the East or the West; there can be but one standard.

DUDLEY S. REYNOLDS.

An Osteopathy Assertion.

CHICAGO, Sept. 4, 1898.

To the Editor:—The recently-issued circular of the Chicago College of "Osteopathy" contains the assertion that the "orificialist" E. H. Pratt (one of the faculty) is a member of the Chicago Academy of Medicine. He has never been a member nor (as the Chicago Academy of Medicine is affiliated with the AMERICAN MEDICAL ASSOCIATION) would he be eligible.

JAS. G. KIERNAN, M.D., Secretary.

NECROLOGY.

JAMES K. HOGAN, M.D., Long Island College Hospital, N. Y., 1888, died at his home in New York City, September 3, aged 42 years. He was a native of Ireland and a graduate of Queen's College, Cork, before he arrived in this country. Two small children are his survivors.

GEORGE MCCREERY, M.D., Bellevue Hospital Medical College, 1877, died on board the transport *Catania* and was buried at sea. He was appointed an Assistant-Surgeon, U. S. Army, and attained the rank of Major at the beginning of the present war.

Dr. L. v. DITTEL, in his 83d year. The Vienna school loses in him one of its most brilliant minds, and the science of urology one of its modern founders. His name is, perhaps, best known by one of his minor achievements, the elastic ligature of hemorrhoidal nodules.

Dr. G. ZANCAROL, at Alexandria, Egypt. A prominent physician among the European colonies in Egypt and writer on medical and surgical subjects and international hygiene.

Dr. BONSDORFF, aged 83. Formerly professor of anatomy at Helsingfors.

WILLIAM H. BENNETT, M.D., N. Y. University Medical College, 1870, died at his home in Brooklyn, N. Y., September 1, aged 54 years.——J. P. Fryer, M.D., Ypsilanti, Mich., August 26.——F. S. Hilbish, M.D., Fremont, Ohio, August 25, aged 56 years.——W. B. Scales, M.D., Sedalia, Mo., August 27, aged 57 years.——John Stearns, M.D., Washington, D. C., August 26, acting U. S. Surgeon Fourth Mass. Heavy Artillery, during the civil war.——Richard Townsend, M.D., Philadelphia, August 28.——William Vannuys, M.D., Anderson, Ind., Rush Medical College, 1855, August 28.——J. M. Wilkinson, M.D., Dover, Del., August 25, aged 48 years.

PUBLIC HEALTH.

Reduction of Typhoid Fever in the French Army.—One of the chief factors in the reduction of the number of cases of typhoid in the French army is the regulation forbidding the men frequenting saloons, cafés, etc., where non-sterilized water is used. The consequence is that the proprietors vie with each other in the work of sterilization.

Unlowered Death-Rate in Diphtheria.—The discussion following Professor Kassowitz's arraignment of antitoxin treatment and the Klebs Loeffler bacillus, mentioned in the JOURNAL, page 257, lasted four weeks and packed the rooms of the Vienna k. k. Medical Association to the doors, in spite of the midsummer heat, at each session. In conclusion Kassowitz stated that he had accomplished his purpose if he had called attention to the fact that antitoxin treatment is not a *res adjudicata*, but is still on trial, and required scientific weighing of actual facts, instead of blind laudation.

The Mosquito and Leprosy.—The mosquito is now credited with the transmission, not only of malarial infection but of leprosy. Prof. Sommer of Buenos Ayres in an article on "Leprosy in the Argentine Republic" (*Semana Médica*, June 23), notes that in hot countries leprosy is more frequent in localities where there is much water and hence larger numbers of mosquitoes. He considers this the explanation of the prevalence of leprosy among fish-eating populations, which used to be ascribed to the fish. Kaposi reported at the recent Lepra Congress the case of a tourist on a steamer passing through the Suez Canal who was stung on the finger by a mosquito and a leproma developed at the spot.

How to Exterminate Mosquitoes.—An almost imperceptible amount of potassium permanganate—1 to 1500—is fatal to the mosquito, according to the *Public Health Journal*. By scattering the crystals here and there, a handful of potassium permanganate will oxidize a ten-acre marsh and kill all the mosquitoes and their embryos in it, thus freeing man from the pest for thirty days. *Janus* for August states that an oil medium is better than an aqueous for insecticides, as the oil works its way into inaccessible crevices. Another communication de-

scribes the peculiar behavior and evident epidemic among ants, in the course of the bubonic plague in India.

Acclimatization in the Tropics.—Dr. Koerfer proclaims in the *Deutsche Med. Woch.* of July 7, that if Europeans would leave their pork fat, their meats and their alcohol at home with their furs and heating stoves, when they go to reside in the tropics, they would avoid all the disturbances that are erroneously ascribed to the climate, but which are, in fact, only due to the failure to conform to natural laws. He considers that nature makes the food conform to the climatic conditions—from the fish-oil polar zone, through the pork-fat temperate zone to the olive-oil and vegetable tropic zone. He writes from an experience of several years in the tropics, and adds that he never saw a single case of sunstroke nor impending symptoms, and that he felt better subjectively when actively employed than when lounging, no matter how high the temperature.

Prophylaxis of Tuberculosis.—One of the Paris dailies observed in reference to the Tuberculosis Congress: "The scientists now tell us that thousands of lives will be saved every year if we will only spit in our pockets." . . . It has been suggested that the "family plan" might prove as beneficial for tuberculous children as it has proved for the mildly insane. It would be cheaper to board children in families in the country than to provide special sanatoria for them, of course restricting the plan to children with ganglionary or osseous tuberculosis, not open lesions. . . . Andvord considers it more than probable that the seeds of tuberculosis are implanted in early childhood in an overwhelming majority of the cases that develop later, especially in children. Hence true prophylaxis is to guard the children from infection, and cure at once all scrofulous and catarrhal symptoms and tendency to a contracted chest, cough and rapid pulse.

Military Status of Medical Officers.—"The medical officer should be the commander-in chief in campaigns in hot countries" are the concluding words of an article by Professor Le Dantec of the French navy, in the *Arch. Clin. de Bordeaux* for July. "The real enemy is the climate, and none but natives or negroes should occupy the lowlands. White troops should never be called upon for garrison duty or work in hot countries except in elevated regions." He quotes the popular sayings: "In the tropics, every white man who tills the soil digs his own grave"; and the Madagascar boast, "Our country need not fear invasion, as it is defended by General Tayo, the fever." In the northern hemisphere, he adds, there is no country exempt from paludism south of the sixtieth parallel, while in the southern hemisphere all the countries south of the thirtieth parallel are free from it, i. e., persons coming to reside there are not affected with intermittent fever, including La Plata, Patagonia, New Zealand and even New Caledonia. While stationed at Bourail, the chief agricultural center of the French colony in New Caledonia, he had no call for a single grain of quinin during the entire year. He considers the terms paludism, tellurism, malarial infection, etc., unscientific and suggests "Laveran's disease" as the most appropriate term.

The Royal Tuberculosis Commission Report.—The recent report of the British Committee on tuberculosis is to be regarded as an epoch-making document which will undoubtedly lead up to valuable life-saving legislation in the near future. This is the third commission within the last ten years to inquire into the subject. The last was the Royal Commission of 1890, which established the foundations of our knowledge as to the relation between tuberculosis in man and the means by which it is imported through the flesh and milk of tubercular animals. The chief recommendation to secure the purity of milk is that notification of every disease in the udder should be made compulsory, under penalty on the owners of all cows; and this is followed by a recommendation that local authorities should be invested with powers of systematic inspection and analysis. Medical officers should also be empowered to suspend the sale of milk of any suspected cow and to prevent the sale of milk from a cow with a diseased udder. Then come important recommendations with regard to the regulations of cow-sheds and byres. Certain leading principles are laid down under this heading, including the provision of proper water-supply and drainage facilities, of a minimum cubic space of from 600 feet to 800 feet and a minimum floor space of 50 feet for each adult beast and of sufficient light and ventilation, the last-named being the most essential requirements. These requirements are directed chiefly to dairy accommodation in populous districts; the conditions in rural districts vary so widely with local circumstances that no minimum cubic space can be specified, the one end to be kept in view being the maintenance of reasonable ventilation without draughts. All these precautions, however, are recognized to be but temporary and uncertain palliatives so long as no attempt is made to eliminate the disease from the animals themselves, and this part of the inquiry may therefore be regarded as the groundwork of the whole. The commission is of the opinion that if the tuberculin test is skilfully applied and the animals which react are carefully separated from the healthy ones, the disease may be reduced to small proportions in a limited time and at a moderate expense. The precedent set them by the Danish Government forms the basis of their recommendation that funds should be placed at the disposal of the Board of Agriculture for the preparation of commercial tuberculin, and that stock-owners should be encouraged to test their animals by the gratuitous offer of a veterinary surgeon to see the test applied. This offer is, however, to be conditional on the owners undertaking to isolate reacting animals from healthy ones, and to keep their stock under satisfactory sanitary conditions, especially in regard to air, space, light and ventilation. In Denmark the results of the government's experiment have been most encouraging, and if similar results are obtained in this country we may hope to see our agriculturists gradually eliminating the scourge of tuberculosis from their herds and enabling us to look forward to the day when we may be able to check the spread of the disease among mankind.—*The Sanitary Record.*

SOCIETY NEWS.

Tri State Medical Society.—The tenth annual meeting of the Tri-State Medical Society of Alabama, Georgia and Tennessee will be held at Birmingham, Ala., Tuesday, Wednesday and Thursday, Oct. 25, 26 and 27, 1898. Frank Trester Smith, M.D. secretary.

MISCELLANY.

A New Midwife Institute.—A midwife institute is to be erected at St Petersburg on an enormous scale, to cost nearly two million roubles, the present small institute for the purpose having been found inadequate.

Congress of Hypnotism.—The second international congress of experimental hypnotism is to meet at Paris in August, 1900, immedately after the International Medical Congress. It is already well under way, with Dumontpallier, president, and Berillon, secretary general.

New Publications.—Two new candidates for the approval of the medical profession are: the *South African Journal of Health*, Cape Town, which began publication July 15, and the *Therapeutic Digest and Formulary*, published at Kansas City, Kan., at $1 a year, the August issue being Vol. i, No. 1.

Maggots in the Ear.—Sampson reports the strange case of a woman affected with suppuration of one ear causing torturing pain. Over twenty fly-maggots were removed from the ear and

a couple more emerged from the depths when air was blown into the tube.—*Deutsch. Med. Woch.*, July 7.

Syphilis in Physicians.—Brandis has collected ten cases of syphilis in physicians, all infected professionally in the fingers, and all extremely violent cases, only yielding to prolonged and repeated treatment. The diagnosis was made very late in each case.—*Deutsch Med. Woch.*, No. 21.

To Avert Collisions in Fogs.—The catastrophe to *La Bourgogne* recalls the suggestion made a while ago by a French physician, that every swift ocean liner should have among its crew a couple of men born blind, as their phenomenally acute hearing would detect the approach of a vessel even in the densest fog.

Preservation of Cholera and Typhus Vaccin.—Pfeiffer and Marx have established that cholera and typhus vaccin for preventive inoculations can be kept for a period of at least four to ten weeks by the addition of 0.5 per cent. phenol, and that the effect of high temperatures, as high as 37 degrees C., does not impair their efficiency.—*Deutsche Med. Woch.*, August 4.

Pyonephrosis of Ectopic Kidney.—A pyonephrosis of an ectopic kidney in the tissues of the mesentery of the small intestine is the unique observation reported by Dartigues in the *Presse Méd.* of June 29, diagnosed a hydatic cyst of the liver. Severe hemorrhage followed ablation, controlled by a Mikulicz packed with gauze. Patient died following day. Tumor first noticed forty years before.

Merited Honors.—The University of Michigan has made Dr. A. Jacobi of New York an LL.D. The University of Edinburgh on July 30 conferred the same degree upon Drs. Henry P. Bowditch of Boston, William Osler of Baltimore and Roddick of Montreal. The last-named was President of the British Medical Association which met during the summer of last year; the other two were delegates in attendance.

Osteomata of the Frontal Sinuses.—Nine deaths followed surgical intervention in the twenty cases on record. A. S. Tauber describes another case in which he removed three from a 32-year-old patient, which had developed subsequent to a traumatic injury above the left eye and caused pronounced ocular disturbances. He found several polypus growths in the mucosa with the osteomata, one still growing and two dead.—*Cbl. f. Chir.*, July 23.

Veiling Taste of Boiled Milk.—According to Professor Gärtner of Vienna the cooked taste of boiled milk can be prevented by keeping it from the contact with the air. He accomplishes this by dropping a small piece of paraffin into the milk, which melts at 70 degrees C. and spreads out in a thin layer on top of the milk, allowing the escape of gases, while preventing the ingress of air, and forming an air-tight, hard cover over the top as it cools.—*Munich Med. Woch.*, July 19.

Peculiar Parasitism.—Flouquet describes the case of a woman of 53, who never had had a serious illness, but complained of continuous pain in the stomach, with frequent acute exacerbations only relieved by drinking cold water, and terminating by the vomiting of certain vegetable fibers and grains presenting the characteristics of phanerogamia angiosperma growing deprived of light.—*Journ. des Sc. Méd. de Lille*, July 16.

Bone Elimination per Urethra.—The elimination of fragments of bone through the urinary passages is always consecutive to a suppurative ostitic process or traumatism, in some cases after an interval of many years. G. B. Schmidt reports two personal cases and reviews the eleven on record. All but two were men. In some cases the bone passed through comparatively rapidly; in others it became encrusted and required an operation.—*Munich Med. Woch.*, July 10.

Etiology of Caseous Pneumonia.—Auclair has demonstrated that the lesions in this affection are produced by the toxins of the Koch bacillus alone. He states that tuberculous pneumonia in all its stages—red hepatisation, gray hepatisation, caseous degeneration—is the work of the Koch bacillus and not of any superadded microbe. It is produced by the action of the toxin secreted by the bacillus of human tuberculosis: etherobacilli and also chloroformo-bacilli, whose specific action he is the first to establish.—*Progrès Méd.*, July 23.

Gen. Leonard Wood and lately Colonel of the Rough Riders, before the war a physician, now military governor of Santiago, is proving himself a sanitarian of no mean capacity. He causes the streets of the captured city to be daily flushed by means of a fire engine and gives a wage of a dollar per diem to each sweeper of the streets. These "American notions" are not much relished but simply tolerated, inasmuch as appetites are keener for the government rations and labor is now becoming as good a fad as golf.

Sterilized Milk for the Infants of Brooklyn.—Ex-Commissioner of Health Nathan Straus of Manhattan is to give Brooklyn the benefit of his Manhattan plant for the supply of Pasteurized milk. He writes to the Board of Health as follows: "Although my twelve milk depots in New York City tax my laboratory to very nearly its full capacity, I have decided to place at your disposal, to be distributed as heretofore in Brooklyn, 1000 bottles per day, and as many more as the capacity of my laboratory will permit, until the heated term is over. I am ready to begin supplying you at a moment's notice, and it will give me pleasure to have the distribution begun at the earliest hour the necessary arrangements will allow."

Partial Thyroidectomy, according to a report by Booth (*Medical Record*, August 13), in eight cases of Graves' disease cured five. One died, and in one there has been no change, while there has been improvement in one where the operation has only been performed six months and a greater improvement with a possible cure may be expected. His conclusions are: 1. Cases may be entirely cured by operative measures. 2. Pathologic and clinical evidence is in support of the view that the symptom complex is the expression of a primary neurosis multiplied by a secondary glandular intoxication. 3. While the ultimate cause of the disease of the gland is still a matter of speculation and a mortality of 7 per cent. after operation is reported, we can not justly recommend it as a routine plan of treatment. 4. Sudden death may occur in or soon after operation, and has not as yet received a satisfactory explanation.

A Lying-in-Hospital in Moscow, according to Dr. F. O. Donahue (Transactions of the N. Y. State Medical Association, Vol. xiv, 1897), affords accommodations for 4,006 patients. This particular institution is for the almost exclusive use of parturients whose children are born out of wedlock. In Russia, criminal abortion is unknown, notwithstanding that a high degree of morality does not exist in the sexual relations. There, although the regular soldiers are not allowed to marry, the government takes care of their children. Foundling hospitals bind out the children to foster-parents and the mother in each instance is allowed occasional communication with her child. Thus does Russia look after her population, in marked contrast with France, where there has been no increased census during the past decade, and yet no claim for the latter country is urged on the score of morals. Practically, therefore, Russia is wiser in her generation.

Protection Afforded by the Organs.—The *Presse Méd.* of June 15 contains the report of experiments by H. Roger, who injected 163 rabbits and 16 guinea pigs with various microbes at five different points in the circulation, to study the protection afforded by the liver and other organs. He found that the microbes are always arrested in the first capillary network they encounter and that the liver disposes of the anthrax, staphylococcus aureus and oidii introduced into the portal vein, so that they disappear and none can be found after a brief interval, but the reverse is the case with streptococcus and coli bacillus which seem to find the liver a favorable soil and flourish in it,

producing extensive lesions. The lung opposes a feeble resistance to the anthrax staphylococcus aureus and oidii, but has a marked bactericidal effect on the streptococcus, although not beyond the limit of neutralizing a fatal dose. The kidney disposes of the oidium albicans.

Forcible Reduction of Deformed Spine.—According to Calot this causes such laceration and gaps in the bones and tissues that many think repair would be difficult even in healthy persons, and that it must be adding fuel to the fire in diseased conditions. L. Wullstein has devised an apparatus that accomplishes the same ultimate results by a slow gradual process instead of Calot's one startling performance. The spine is gradually pulled straight by continuous traction, the patient reclining suspended in an iron-frame bed with a dynamometer to regulate the traction. The face, lower jaw, arms, abdomen, chest and some other parts are left free. Radiographs taken before, during and after treatment show the remarkable beneficial action of the various factors employed in the reduction. The apparatus is described in full and illustrated in the *Cbl. f. Chir.*, July 9.

Suprasymphysar Implantation.—Mikulicz recently performed the operation of suprasymphysar implantation of the urethra and penis in the bladder on a young man whose anal and perineal region had been shot away with the upper part of the scrotum. The urethra was entirely destroyed above the end of the pars bulbosa. The roots of the corpora cavernosa of the penis were severed and the dorsal artery and vein tied, while the corpora cavernosa urethræ was detached whole and lifted into a channel cut for it in the edge of the pubis. The bladder was then opened and the urethra in the pars bulbosa sewed into the bladder with a wire suture, and a catheter introduced. The patient recovered rapidly. He can now—twelve months later—retain his urine two hours, and urinate in a stream. A fistula in the perineum is not yet entirely healed; evidently there is some small sequester still left from the original traumatism. Otherwise the results are so satisfactory that Mikulicz recommends the method in case of extensive traumatic destruction or neoplasms.—*Cbl. f. Chir.*, July 20.

Corks and Labels.—Eisen (*Journal of Applied Microscopy*, July) uses paraffin to counteract the destruction of labels and corks. After the labels have been written and have become perfectly dry, he dips them in melted paraffin long enough to allow the paraffin to soak through and make the paper semi-transparent—a few seconds to a minute. Taking the label out, the paraffin is drained off and in a few seconds has hardened sufficiently to allow the label to be placed in the bottle with the alcoholic specimens, without deteriorating in color or composition. The paraffin prevents the writing being tampered with or other writing added. In the case of corks, he places them in the boiling or melted paraffin for a few minutes, when the paraffin will fill up the pores. In placing the cork in the bottle he places a string at one side to allow the air to escape, or the cork will not stay in the bottle. The corks should be perfectly dry and new. After placing the name and number of the specimen on a label, which is stuck on the cork by a couple of pins, he dips the neck of the bottle and cork in the paraffin, hermetically sealing it. Bottles treated thus do not require refilling, as the alcohol does not evaporate and the labels remain clean and neat.

Rachitic Deformities.—Reginald H. Sayre (*Pediatrics*, August 15) believes cod-liver oil of benefit in the treatment, except possibly in hot weather. He has found phosphorus, together with correction in diet, advantageous, and administers it in the form of the elixir of the "National Formulary," devised by Dr. Chas. Rice of Bellevue. He finds that children a year old can take $\frac{1}{100}$ grain of phosphorus three times a day with no bad results, and in somewhat older children he has given a grain three times a day with great benefit. "Small children with ricketts ought to be kept in the recumbent position and receive daily massage, as the soft tissues of their bodies are as much below the normal tonicity as are their bones. In many of these cases slight antero-posterior or lateral curvatures of the spine can be detected, and in such cases I know of nothing so useful as the wire cuirass. It is far better than confinement in bed, as it permits the child to be carried out doors for fresh air and sunshine—two great aids in cases of malnutrition, whose effect seems to be often overlooked, while too much importance is attached to drugs."

Surgery of the Brain.—Baudet reports a case of supposed tumor, patient comatose, operated upon and no lesion found, but the intervention relieved the patient and cured the epileptic attacks, paralysis, etc. He reviews four similar cases in literature. *Rev. Int. de Therap.*, No. 3. . . . Thoel notes a case of pure hyperthermia at 40 degrees C. for forty-five days, in patient trephined for old fracture of the skull, causing epilepsy. He considers it the result of direct irritation of the corpus striatum by the operation, as the latest investigations seem to indicate that the corpus striatum is the chief heat center. *Mitt. a. den Grenzb.*, ii, No. 1. . . . Braun relates a case of epilepsy cured by extirpation of the center for the left hand, after cyst had been removed and the skull scraped without curing it. The thirty cases on record treated by ablation of a motor center have resulted in eight failures, nine improvements and thirteen cured—three over three years.—*Deutsche Ztschr. f. Chir.*, Vol. xlviii, No. 3. Abstracts in *Cbl. f. Chir.*, July 23, and *Munich Med. Woch.*

Dural Infusion.—Jacob (of Leyden's clinic) considers himself justified by the results of his experimental work on dogs, in recommending the utilization of lumbar puncture for direct therapeutic applications in cerebro-spinal diseases in man, when the method is perfected by further research. No reaction followed injections of 50 c.c. of $\frac{1}{4}$ to $\frac{1}{2}$ per cent. carbolized water, nor subarachnoid injections of 35 c.c. of $\frac{1}{2}$ per cent. solution of chloral hydrate, but severe transient symptoms of endocranial pressure and of intoxication followed the injection of 25 c.c. of a 4 per cent. solution of potassium iodid, which lasted from ten to twenty-four hours. Pain and agitation also followed the injection of phys. solution, although as much as 75 c.c. of a 1 per cent. solution of sodium chlorid could be injected without reaction. The iodin is rapidly absorbed and retained by the brain matter and spinal cord, not appearing in the urine until long after the usual interval when administered *per os*. The fact that a small amount of a non-irritating fluid injected is nearly all absorbed, while a large amount—50 c.c.—is not, suggests the existence of a system of valves in the subarachnoid spaces. His experiments also confirm the theory of the incompressibility of the cerebral substance, the symptoms ascribed to pressure from an increased amount of cephalo-rachidian fluid being really due to anemia caused by the pressure of the fluid on the artery.—*Gaz. d. Osp. e d. Clin.*, from *Berlin Klin. Woch.*, 21 and 22.

Anomalies of the Bladder From Ovarian Tumors and Fibro-Myomæ.—O. Bloch contributes a comprehensive study of this subject to the *Nordsk. Med. Ark.*, 1898, No. 2, including a study of the lesions occurring in such cases during laparotomies. He has found the bladder abnormally shaped in five out of his 106 laparotomies, and has collected 33 other cases of lesions due to the abnormal shapes, which he groups as the "leaf-shape," the "hour-glass," the "triangle," perpendicular or inclined, and the "sausage." The bladder, in most of these cases, not only extended up to the umbilicus, but its appearance and texture were so altered that its identity was never suspected. Careful examination beforehand; vigilant attention during the operation, bearing in mind the 38 cases of anomalies recorded, and that 14 out of the 36 injured, died; the cautious introduc-

tion of a hard catheter, or better still, the injection of boricated water through a soft catheter in case of doubt, will aid in the diagnosis and forestall injury. If, when the peritoneum is opened, it does not look normal, leave that point and incise elsewhere. Lunggren reports in another issue the case of a twelve-year-old boy, upon whom he operated on account of a vanishing and recurring tumor, causing intense pain at times. The tumor was found to be a second normal bladder, but with no communication with the first. An anastomosis was made between the two and all disturbances ceased.

Cancer of the Breast.—Warren (*Boston Med. and Surg. Jour.*, August 15) tabulates 72 cases covering a period of fifteen years, of which 21 are known to be alive at the present time and 38 dead. Of those dead, 2 were from other diseases than cancer and that long after the danger limit had passed. Of the 26 living, 3 now have recurrence of the disease and 4 have had, but remain well at present. His figures show that the disease is more frequently found in the upper and outer quadrant than in any other quadrant, in the upper oftener than in the lower hemisphere, and in the outer rather than in the inner hemisphere. The date of recurrence could not be learned in 9 cases, but in 41 it occurred within three years in 37, between three and four years in 2, and between five and nine years in 2. Considering three years as the limit, as a gage of the success of the operation there are 17 cases: Two of these are dead, "one dying, ten years after the operation of apoplexy, and one dying of sporadic cholera six years after the operation"; 3 had recurrences, from which they are at present well; one of them three years, one four years and one ten years after the operation." He considers retraction of the nipple an unreliable symptom, it being present in only 13 of the cases, and there may be extensive disease of the breast without nipple retraction. The dimplings of the skin over the nodule are more significant and in marked contrast to the protrusion of the growth, in the case of a benign tumor or cyst above the surface when the patient is in the recumbent posture."

Experiments Regarding the "Setting" of Plaster of Paris.—J. A. Belcher reports (*Treatment*) the results of experiments undertaken to determine the effects of various agents on the "setting" of plaster of Paris: "Two drachms of plaster, mixed with one drachm of a 5 per cent. solution of sodium chlorid, hardened in two minutes. Mixed with one drachm of a 5 per cent. solution of sugar, it hardened in three minutes and a half. Mixed with one drachm of a 1 per cent. sodium chlorid solution, it hardened in five minutes. Mixed with one drachm of an 0.5 per cent. sodium chlorid solution, it hardened in five minutes. Mixed with one drachm of a 5 per cent. calcium chlorid solution, it hardened in six minutes and a half. Mixed with one drachm of tap water, it hardened in nine minutes. Mixed with one drachm of distilled water, it hardened in nine minutes. Mixed with one drachm of saturated solution of sodium chlorid, it hardened in eighteen minutes. Mixed with one drachm of a 5 per cent. solution of glycerin in distilled water, it hardened in nineteen minutes. Mixed with one drachm of a 5 per cent. solution of white of egg in distilled water, it hardened in twenty minutes. Mixed with one drachm of a 10 per cent. solution of white of egg in distilled water, it hardened in twenty-five minutes. Mixed with one drachm of a 10 per cent. solution of glycerin in distilled water, it hardened in thirty-five minutes. Mixed with one drachm of a 25 per cent. solution of glycerin in distilled water, it hardened in sixty minutes." The figures tell, says Belcher, their own tale, and show that where it is of importance to make plaster of Paris set rapidly it should be mixed with a five per cent. solution of common salt, and this may be made roughly by adding a tablespoonful of salt to a pint of water.—*Scientific American*, August 13.

Gloves in Surgery.—McBurney (*Annals of Surgery* for July) gives a detailed report of the results which have followed in his surgical work since his adoption of the use of india-rubber gloves in all operations, last October. The fact that the glove can be boiled and so made absolutely sterile is a matter of especial moment, and being non-absorbent, they remain sterile throughout the operation. By their use, no matter to what previous use the operator's hands may have been put, he may begin his operation without dread that they may cause infection, and may even operate with a suppurating lesion on his own hand, with impunity. The rubber gloves add greatly to the operator's comfort, and avoid loss of time and the annoyance caused by a prolonged effort to sterilize his hands. He simply washes his hands in soap and water and puts on his sterilized gloves, and when he removes his gloves the hands are perfectly clean and soft and the nails free from any discoloration, while no cracking occurs. By them there is always protection against infection. The operator soon accustoms himself to the use of the gloves, being able to thread needles, handle instruments, tie ligatures, as well and rapidly as without them. As to the sense of touch, he does not find it blunted by the use of gloves. Probably the fact that the hands are never hard and callous or roughened by irritating disinfectants accounts somewhat for this acute sense of touch. He boils the gloves fifteen minutes in a 1 per cent. soda solution, after first washing them thoroughly in soap and hot water, to which a little aqua ammoniæ has been added. From the boiling solution they are removed by sterilized forceps and placed on a sterilized towel, which is then folded over them and not opened until the individual who wishes to wear the gloves is ready to put them on. A fresh pair is afforded for the operator, assistants and nurses in every operation. If the hands are rubbed with dry, sterilized starch, gloves damp in the interior, can be quite easily drawn on, as can wet gloves, if the hands are moistened with glycerin. The inexpensiveness of the gloves is a favorable factor, although they last from four to six weeks under daily operating. (*Vide* JOURNAL for November 1897, p. 1060; March 19, 1898, p. 672; June 25, 1898, p. 1522).

Legal Restraint of Marriages.—Russell recently presented "A Plea for Posterity," before the Washington County (Pa.) Medical Society (*Phil. Med. Jour.*, August 27), a paper in which he cites statistics of many present sociologic conditions and makes a plea for legal restraint of marriage among certain classes. He says: "Some would deny the right of existence, claiming that this right has been forfeited by the inferior mental, moral, or physical status of himself or his ancestors. As the existing order of things involves the visiting of the father's sins upon the children, even the most conservative must admit that the *defective has no right, either natural, moral, or legal, to produce a posterity cursed with his affliction, to be a danger and a burden to your posterity and mine.* There are, however other fountains feeding this stream of corruption, and we can never hope to stay the tide until they are controlled through heredity itself, by *denying* to the defective the right to propagate his tainted species. These founts are alcoholism, syphilis, tuberculosis, epilepsy, insanity, and gonorrhea." He then considers these several "founts" in detail and concludes with a bill prepared by him for the Legislature of Pennsylvania, with a view to securing such State laws as will prevent the issuing of a marriage license to any person "contemplating marriage unless he or she shall have received from the persons so appointed a certificate setting forth that such applicants are free from the following diseases, any of which shall be deemed sufficient cause for refusing a license: Syphilis, gonorrhea, dipsomania, hereditary insanity, true insanity, or insanity resulting from vice, epilepsy, hereditary consumption or tuberculosis." He says that the State of Texas already prohibits the marriage of epileptics; Massachusetts, the epileptic, alcoholic and syphilitic, while Ohio has a similar law to the one proposed, and the same bill has been introduced in the Maryland Legislature.

Sense of Feeling in a Lost Limb.—Dr. Hervie A. Dobson of Washington writes of his own experiences following an amputation of his left leg. He states that the limb was amputated at the middle third of the thigh over thirty-four years ago. The sensation of knee, foot, heel, hollow of foot, and toes being present is stronger than in the other limb. In fact, when at rest one is not conscious of any sensation in his limbs in a state of health; but in the stump the sensation is ever there, sometimes painfully so. This is no hallucination, but is due to anatomic and physiologic reasons. "Nerves of sensation pass out from the spinal column to every part of the surface of the body, each nerve having its own particular part to supply and each conveying to the nerve-center knowledge that its terminal point is being irritated. Thus, a nerve terminating in the end of the big toe, no matter where it is irritated between the nerve-center and the end of the toe, will say to the nerve-center, 'The end of the big toe is touched or hurt'." Just before storms, when the barometric pressure is light, the air within the tissues expands and presses on these nerve-ends, causing intense pain sometimes, and there is no relief but to reamputate the limb and see that the nerves are not caught in the cicatrix. It is generally the stump that perished away and becomes small that gives the most annoyance. He adds, "My leg was amputated in such a position that when I stand it seems to be flexed with the foot behind me, and I have often tried to remove it from the way of persons passing and have even tried to put it out to prevent the slamming of a door behind me, and much to my surprise the door did not stop. I have had many a fall in trying to walk, when springing up quickly I tried to put my foot to the floor. I have seen comrades whose legs were amputated below the knee, when on crutches, try to put the foot down and so come heavily on the end of the stump. As I grow older there is a sense of shortening in the leg, the foot seeming to come nearer the body. If I move the muscles of the stump, as in the effort to extend the knee, a sensation of great heat occurs at once in the stump, when it may be almost frozen with cold. Dry heat sometimes relieves pain in these stumps, but nothing will relieve permanently except an operation, as above stated."—*Literary Digest.*

Mydrin, the New Mydriatic.—Dr. S. Snell writes to the London *Lancet*, July 16, saying that he desires to confirm "my observations on this mydriatic in the Clinical Journal in 1895, which were, I think, the first published in this country. I would like to add that I again refer to the value of mydrin in my volume on the 'Examination of the Eye' (Pentland), published this year. My object in writing now is to reiterate my opinion of the efficacy of mydrin as a rapid pupil dilator without affecting the accommodation, and the effects of which quickly pass off, features marking it as specially adapted for producing mydriasis for ophthalmoscopic purposes. The present price of the drug is, however, almost prohibitive of its use. I understand that it still costs something like $6.25 a drachm, but of course a demand for it would soon bring about a reduction in price. It is further to be desired that some firm should furnish the drug in the form of gelatin discs."

Washington.

Report of the Health Officer.—The report of the Health Officer for the week ended August 27 shows the total number of deaths to have been 100, of which 66 were white and 34 colored. The principal causes of death were: Nervous diseases 16, circulatory 7, intestinal 6, genito-urinary 8, diphtheria 2, typhoid fever 4. There were 36 cases of scarlet fever and 25 cases of diphtheria under treatment at the close of the report.

To Improve the Water-Supply.—The last appropriation bill included an item providing for the water-supply of the District under the chief of Engineers, as follows: "To enable the proper officer of the Government having charge of the Washington aqueduct and water-supply to the city of Washington, to make an investigation into the feasibility and propriety of filtering the water-supply of Washington, and to submit to Congress a full and detailed report thereon, and to meet all necessary expense of said investigation $3000. Said report shall be accompanied by a detailed estimate of the cost of the work required and in making the investigation, and in the preparation of this report, the Chief of Engineers, U. S. A. shall be associated with the proper officer of the government in charge of the aqueduct as consulting engineer. Chief Engineer Wilson has arranged through the Secretaries of War and State to be supplied with the history and latest information concerning the filtration systems adopted by the principal European cities. The Secretary of State has called on the consuls of the prominent European cities for all material data relating to the operation of their systems of water-supply. The unfinished and abandoned water-tunnel and new reservoir of the city is to be repaired and put in operation.

To Inspect Camp Wikoff.—Dr. H. L. E. Johnson, one of the Citizens' Committee, has gone to Camp Wikoff, Montauk Point, L. I., to inspect the sanitary conditions of the camp and the medical and commissary care of the District Volunteers.

Louisville.

Hospital Changes.—Drs. T. J. Poteet and G. B. Jenkins assumed places on the resident medical staff of the Louisville City Hospital, September 1. Dr. Poteet is the second honor man from the Kentucky School of Medicine, and Dr. Jenkins the first honor man from the Hospital College of Medicine. Dr. Sidney J. Meyer, who received the first honor from the Kentucky School, refused the appointment to the Hospital to accept the position as Acting Assistant-Physician in the Army. Drs. Ross and Forsyth are succeeded as internes. Dr. Ross goes to Leavenworth, Ind., and Dr. Forsyth to Harrodsburg, Ky., to practice.

School.—The Louisville School Board at a recent meeting decided that the public schools would not begin their sessions until September 15, instead of the first Monday, on account of the extremely hot weather. Last year the severest heat of the season occurred during the first sixteen days, when the thermometer showed a minimum of 93 and a maximum of 100 degrees.

Smallpox.—The State Board of Health has raised the quarantine of Jackson County, as all smallpox cases are under control and no new ones have developed. The quarantine was raised upon the recommendation of Dr. M. R. Gibson of that county, it having been left to his discretion by the State Board at a recent meeting.

Muench.—Dr. Albert Muench is lying quite ill of typhoid fever at his residence in this city. His assistant, Dr. Allan McNally, was prostrated by the heat on the street, but has again resumed his practice.

Nurses.—Kentucky has furnished a large number of nurses as volunteers in the Army hospital, among whom may be mentioned Misses Caroline Diehl, Marie Lustnauer Tweed, Elizabeth Hilf and Mary C. Laughlin.

Coroner.—The Coroner of Jefferson County, Dr. H. M. McCullough, has submitted his report of inquests held in the county from January to July. Total number of inquests, 300; males, 188; females, 102; white, 167; colored, 133; deaths due to homicide, 22; suicides, 20; accidental drowning, 16; railroad accidents, 13; accidental poisoning, 4; wagon accidents, 4; street-car accidents, 2; sunstroke, 1; lightning, 1. This shows about the same proportion of deaths due to lightning as given by other statistics.

Health Officer's Report.—Health Officer Allen has just issued his yearly report, which contains some interesting reading. He calls attention to the ordinances which have been put in force since his incumbency, among which may be mentioned the following: Registration of births and marriages;

regulating the burial of the dead; creating an embalming board to pass upon the qualifications of embalmers; regulating the sale of milk; empowering the Health Officer to abate nuisances; giving right of way to physicians; providing against overcrowding in boarding-houses and tenements. A nnmber of recommendations are made, which, if the Board of Safety and Council will grant, will place the Health Department upon a sound footing and great good can be accomplished. He requests an increase of the Health Department force; the appointment of Health Inspectors for each ward in the city, they to assume the duties of inspection now performed by the police; a veterinarian as live stock inspector; a competent chemist; a milk and food inspector, and additional clerical assistance in the health office. An increase in the appropriation is asked, double of that for 1897. It is recommended that consumption, whooping-cough and typhoid fever be included among the diseases which have now to be reported to the department. He recommends the establishment of public baths in those districts where the poorer tenements are located. Not much can be expected from city taxes for the accomplishment of this, but it is to be hoped that private philanthropy will actuate the establishment of this needed reform. It is recommended that all school children be vaccinated annually, regardless of the presence or absence of smallpox. The teaching of sanitary science in the schools is recommended. The public drainage is declared inadequate, and an addition to the eighty-five miles of sewerage is asked for. Cremation of public garbage is recommended and urged. He favors an insane ward at the city hospital, which can be accomplished as soon as the colored patients are moved to the building now occupied as a male high school, shortly to be vacated, this insane ward to be used as a temporary detention ward for the insane or suspects.

KENTUCKY SCHOOL.—An injunction has been granted Drs. S. E. Woody and C. W. Kelly against Dr. W. H. Wathen, preventing him from in any way claiming he is Dean of the Kentucky School, and against Drs. Sam Cochran and Arthur Boyd from claiming they are Professors in the School. This disposes of the contention in regard to the mail, it being the order of court that all mail addressed to Dr. S. E. Woody, Dean, or Dr. W. H. Wathen, Dean, be delivered to Dr. Woody.

Philadelphia.

PENNSYLVANIA HOSPITAL.—The 147th annual report of the above hospital contains statistics of interest to all medical men, especially to those connected with institutions of similar scope and objects. Since the foundation of the hospital in 1751, there have been admitted to beds in the wards 140,144 patients, of which number 96,369 were poor persons supported at the expense of the institution. During the past year there were treated 3241 patients in the wards and 13,535 in the out-patient department. The average cost per day for each in-patient was $1.21, and average expense to the hospital of each out-patient, $0.48. The average cost of each in-patient compares most favorably with that of many other large hospitals in which the average expense ranges from $1.40 to $2.50. During the past year there were 23 amputations and 83 abdominal sections. Herniotomy was performed 25 times. In the Department for the Insane, the patients treated numbered 584, 266 men, and 318 women; 53 recovered, 30 improved, and 18 remained stationary. Regarding the "causes" of insanity since the opening of the new hospital for insane in 1841, the report says: "Of 10,888 admissions, 55 per cent. of the causes might be placed in the preventable division, and 45 per cent. in the non-preventable. It may be affirmed of the whole number that more than 50 per cent. of the admissions acquired their mental disease from some ills of life *not transmissible* and but a small proportion can be ascribed to heredity." During the past year the Hospital received in gifts, legacies, etc., the sum of $33,808.60, and in addition is advised of legacies amounting to $110,000. The total receipts for the year just closed were $453,650.45, and the total expense $398,275.87, leaving a net cash balance on hand of $55,384.58.

HOSPITAL TRAINS IN VOGUE.—As the result of the recent successful trip made by the city hospital train which brought home from the different army camps soldiers sick with typhoid fever, the movement has resulted in stirring up the city and State officials. Governor Hastings sanctioned the movement and gave his support for the equipment of another train to go to the front and bring home those patients too ill to travel otherwise. The Medico-Chirurgical Hospital has also equipped a train of its own and sent physicians and nurses along, and it is believed that before many days every sick soldier will be cared for in well-equipped hospitals. Of those first brought home, all have improved, some so much that they have already been discharged cured.

MORTALITY STATISTICS.—For the week ending at noon, August 27, there were 429 deaths reported, a decrease of 17 over last week and an increase of 42 over the corresponding period of last year. The following are some of the causes: Apoplexy, 17; Bright's disease, 11; cancer, 8; cholera infantum, 19; consumption, 54; croup, 4; heart disease, 21; dysentery, 5; inanition, 17; marasmus, 36; old age, 13; suicide, 3; sunstroke, 6; uremia, 1.

INFECTIOUS DISEASES.—This week: Diphtheria, 56 cases, 8 deaths; scarlet fever, 17 cases, 2 deaths; typhoid fever, 118 cases, 9 deaths. Last week: Diphtheria, 45 cases, 16 deaths; scarlet fever, 10 cases, 1 death; typhoid fever, 78 cases, 8 deaths. This rapid increase in typhoid fever is due to the return of the soldiers, brought to the city from army camps.

PRESERVATION OF MILK.—In an interview, Dr. Henry Leffman, City Chemist, recently stated that there was a rapid increase in the rôle of salicylic acid as a preservative of milk and other articles of food. Owing to this cause much harm is being done, as the drug is especially dangerous to children. The artificial form used by brewers in the preparation of bottled beers is poisonous and should be prohibited. Dr. Leffman was of the opinion that prompt measures should be enacted for the suppression of the evil.

"TYPHO MALARIAL" FEVER.—Dr. S. Solis Cohen, Medical Chief of the Jefferson Medical College Hospital, states that the fever of soldier patients was being examined thoroughly in suspected cases in order to find out whether or not the cases of typhoid fever were also infected with the plasmodium malaria. In an interview, Dr. Cohen criticises the proper authorities quite severely for allowing preventable diseases to spread with such rapidity among the soldiers.

DEATH FROM CHLOROFORM.—As the result of a coroner's inquest upon the case of Catharine Montague, 36 years of age, who died at the Polyclinic Hospital of Philadelphia, the jury pronounced the death due to chloroform administered prior to a surgical operation.

Medical and Hospital Service in Cuba.—The following extracts from a report by First Lieut. Guy C. M. Godfrey, Assistant-Surgeon, U. S. A., will convey some idea of the difficulties contended with, and the efficiency of the medical and hospital service at the front:

SANTIAGO DE CUBA, July 29, 1898.

To the Surgeon-General, U. S. Army, Washington, D. C. (Through proper channels.)

Sir:—As commanding officer of the Hospital Corps Company of the First Division, Fifth Army Corps, I have the honor to submit the following report:

This company was organized at Tampa, Fla., June 5, 1898, just two days previous to the departure of the troops of the First Division for the transports, at Port Tampa, Fla. On the day of organization the strength of the company was eighteen privates. No non-commissioned officer was assigned to it until June 7, 1898, when Acting Hospital-Steward McGuire reported for duty. He was at once assigned as first sergeant of the company, which place he has held up to the present date. A cook and an assistant cook, orderlies for the medical officers and a clerk were at once detailed. . . . . .

When the order came to move, the men of the company per-

formed the work necessary thereto, and the enthusiasm and *esprit du corps* with which they labored added greatly to the celerity and facility with which the task was accomplished. The personnel and supplies of the division hospital, as well as the hospital company, was placed on board the transport *Santiago*, and arrived off the coast of Cuba, near Santiago, June 30, 1898. The day before landing, all of the material was brought up from the hold by the men of the company, and stored on the main deck of the ship near the forward starboard port. This was done by direction of Major W. W. Wood, chief surgeon of this division, and proved a wise and efficient measure.

We landed on June 15 at Siboney, Cuba, and pitched camp on the beach. On this day thirteen of the privates of the hospital corps of the Seventy-first New York Vols. joined the company. During the night of June 25, Acting Hospital Steward McGuire and five of the men worked all night unloading the material for the hospital, and storing it upon the beach under canvas. This was done by using small boats drawn by steam launches, and, owing to the high swell, it was at times quite dangerous. I remember several occasions where the men narrowly escaped injury from falling boxes.

On June 26 the men were given a short drill to perfect organization. Hurried preparations were made for a forward movement, and as absolutely no transportation could be obtained from the quartermaster's department, these preparations consisted principally in selecting such necessary dressings and drugs as the men could carry on their backs, and litters. On June 27 the First Division moved forward, and the Hospital Company followed in rear of the Third Brigade, taking the road toward Seville. Owing to the possibility of an immediate skirmish or battle, none of the medical officers rode their horses, but made pack-mules of them, and carried as large a number of dressings, etc., as they could. The divisions camped in columns of brigades, and the Hospital Company and division hospital pitched camp near the headquarters of the division commander. On the following morning twenty men, with the steward and two medical officers, returned to Siboney, and brought up four litters, and as many medical supplies as possible, returning about 2 o'clock P.M. After a soaking rain the company broke camp, and was ordered to move forward two miles. This they did, marching over a rocky, yet muddy road, carrying the hospital supplies with them. They pitched their shelter tents on the soaking ground, while the officers, who had no shelter, slept in the open air, exposed to dampness and poisoning. On June 29 the company moved forward a quarter of a mile farther to a beautiful spot with the Aguadores River on one side and the Siboney road on the other. Here on the 29th the division hospital was established, and here it remained all through the terrible carnage that followed. On this day six wagon-loads of our supplies were brought up from the beach at Siboney, and tent flies were pitched and everything arranged for the coming battle. On June 30 the work of establishing the division hospital continued, and more of our supplies were brought from Siboney. . . . . .

On the evening of July 1, the writer rode in the direction of the firing toward El Caney, and while searching for an ambulance, rode to the extreme right and visited the firing line of the Twelfth Infantry. He then returned and reported to Major Wood, who directed an ambulance to be at once sent in that direction. Owing to the very small number of hospital corps men present with the division, and as the number of ambulances for the entire army was limited to three, it was impossible to expect them to convey the total number of wounded from the collecting stations to the First Division hospital. It was soon apparent that the entire force of the hospital corps would have to be used to man the hospitals, but about noon Acting Hospital Steward McGuire, two litter squads and an ambulance went forward up the San Juan road. As the Spanish shrapnel were bursting around the battery on El Paso hill, near the road, it was not deemed prudent to take the ambulance beyond that point. There it remained, while the two litter squads pushed forward up the San Juan road. One wounded man was found, who was not able to walk, about 400 yards before reaching the farthest crossing of the Aguadores River. He was at once dressed and conveyed to the rear by a litter squad. The other litter and the steward advanced about four hundred yards farther, to the east bank of the Aguadores, and there found a wounded man who could not walk. At this time the Sixth and the Sixteenth Infantry were immediately in front, and were making their advance toward San Juan hill. It can therefore be seen that the hospital litter squad in rear was under the hottest kind of fire, and the bullets were cutting the leaves all around, but not one of these men faltered, or showed the least sign of fear. . . . . .

At this time the wounded were coming back in a constant stream, and such as needed stimulation or dressing were at once attended to by the roadside. Many of them returned alone, others walked, supported by the arm of some comrade, while the more seriously wounded were borne upon litters of various kinds. A few of those who returned had not received medical attention, but the majority of them were dressed with first-aid packages by the regimental surgeons and their hospital corps men.

At about 1 P. M. Major Valery Havard, chief surgeon of the cavalry division, established an ambulance station on the east bank of the Aguadores near El Paso. At this station many dressings were readjusted and a few patients were dressed for the first time. Stimulants, medicines and dressings constituted the stock at this station, which was about a mile in advance of the First Division hospital. No point farther to the front was safe from the enemy's fire. The ambulances were worked constantly, and, considering their number, did remarkably well. Late in the afternoon ambulances were taken forward to near the farthest crossing of the Aguadores, but it was rather dangerous at all times, as the enemy kept the San Juan road enfiladed all day long. It was also very dangerous on account of Spanish guerillas, who were located in trees overlooking the road. Several men carrying wounded were shot, and, indeed, in a few cases the patients themselves were hit.

Later in the afternoon a dressing station was established at the farthest point where the San Juan road crossed the Aguadores. At this place there was a vertical bank about four feet high, beneath which was a gravel beach. Here a certain amount of shelter was obtained, but bullets frequently cut through the bushes, or splashed up the water in the creek. At one time it was enfiladed by Spanish sharpshooters in trees up the creek. Several horses were killed here, but no patients, surgeons or attendants were injured that afternoon. It was at this place on the following morning that Dr. Danforth was killed. Late in the afternoon several escort wagons, having carried ammunition to the front, were turned over to the writer by Lieutenant J. D. Miley, General Shafter's aide-de-camp. These were taken to this station and filled with the wounded, who were transported to the First Division hospital. Empty army wagons that could be found were used for this purpose, and the wounded kept coming into the hospital all night. On the following morning an ambulance and two wagons were taken to the dressing station just described, and the wounded brought in, among them being Acting Assistant-Surgeon Danforth, who was shot through the head. Major S. Q. Robinson had assumed command of this station on the previous afternoon, but at this time he, with Captain W. D. McCaw, rejoined their regiments, and left the station in charge of Captain Paul Newgarden. Major V. Havard arrived later and established an ambulance station at this point, which was then comparatively safe. It was customary during the battle for the writer to send litters and dressings to the front in the empty ambulances. During and after the battle, the men of the hospital corps company did much of the work in the First Division hospital. They assisted in operations, helped in applying dressings, made soup and coffee, carried patients to and from the operating tables, and acted as nurses to the wounded. With but few exceptions, they worked all day, all night, all the following day, and most of the next night. They were assisted by members of the bands of the regiments and by some of the hospital corps men of the regiments.

During the battle the first-aid work was very effective, and was done mostly by regimental surgeons and their hospital squads. Many dressings were applied by the line officers, by soldiers on the firing line, and in some instances by the wounded men themselves. Major S. Q. Robinson, who commanded the Aguadores dressing-station on July 1, says that only about ten patients came there who had not been dressed by first-aid packets. Words can hardly express the appreciation which the officers and men of the line have for the first-aid packets. They realize now, as never before, the value and importance of instruction in first-aid work. The very small number of suppurating wounds can readily be accounted for prompt applications of these dressings.

Pyramidal Bandages for Postpartum Hemorrhages.—A very simple and easy method of arresting hemorrhage has been devised by E. Fava, who hopes to see it generally adopted by obstetricians and midwives. The uterus is first cleared of clots by compression from without. After retraction, the fundus is pressed downward toward the symphisis until the posterior surface is on top, which is easily accomplished in its relaxed postpartum condition. Linen cloths are then packed directly over

the uterus in such a way that they form an inverted pyramid, pointing toward the spine, bound tight with a bandage around the body. The external surface of the uterus and the nerve terminals are stimulated, while there is no chance for infection as all the manipulations are external.—*Arch. di Ostet. e Ginec.*, May.

THE PUBLIC SERVICE.

The Surgeon-General of the Army and the American National Red Cross.—Owing to the pressure of my official duties I have not heretofore felt justified in taking the time to make an explanation with reference to my attitude toward the American National Red Cross.

It has been repeatedly charged in the newspapers that I am hostile to this organization and have refused to accept its assistance in the care of our sick and wounded soldiers and that as a result of this refusal there has been unnecessary suffering.

These charges are without foundation, except in so far as I objected to the sending of female nurses with troops in the field engaged in active operations. We have a Red Cross Hospital Corps in the army, of enlisted men whose duty it is to render first aid to the wounded upon the field of battle and to care for the sick in our division field hospitals, and I have been of the opinion that female nurses would be an incumbrance to troops during active operations; but so soon as serious sickness developed in our camps and it became necessary to treat typhoid fever cases in our field hospitals, I gladly accepted the services of trained female nurses for the division field hospitals and in our general hospitals we have employed them from the first. The general testimony from the surgeons in charge of these hospitals has been that their services have been of great value. Very many of these trained nurses have been obtained through the Red Cross Society for the Maintenance of Trained Nurses, Auxiliary No. 3, and I desire to express my high appreciation of the valuable services rendered to the Medical Department of the Army by this organization.

My attitude toward relief organization is shown by an endorsement dated May 5 upon a letter addressed by Rev. Henry C. McCook of Philadelphia to the President and referred to me for remark:

"May 5, 1898. Respectfully returned to the Adjutant General of the Army.

The plan proposed for the organization of a relief association seems to have been well considered and the object in view will commend itself to every patriotic citizen. But it is a question whether the President should give special privileges to any particular organization. Other prominent individuals in different parts of the country may be organizing for the same purpose. One such proposition has come to me from Chicago. While I approve in a general way of organization for the relief work proposed, it appears to me that it will be best not to give, in advance, exclusive privileges to any one particular organization. In case of need assistance should be accepted from any organization prepared to give it."

This has been my guiding principle throughout, that relief when needed should be promptly accepted without reference to the source from which it comes. The relief afforded by the National Red Cross at Siboney was promptly accepted by the surgeons on the spot, but it is evident that it was entirely inadequate to meet the emergency.

A committee of the American National Red Cross Association called upon me in my office in Washington some time in advance of the landing of our troops in Santiago, making an offer of assistance. I received them most courteously and advised them to use their resources in fitting up a hospital ship, telling them that a hospital ship was then being fitted up for the use of the Medical Department, but that it was not at all improbable that an emergency would arise which would overtax our resources, and that in such an event a hospital ship properly equipped, having on board a corps of doctors and nurses would be a most valuable auxillary.

Furthermore, the American National Red Cross Association has had full authority to send agents and supplies to all our camps since June 9, 1898, and if there has been any suffering for want of proper supplies they must share the responsibility with the Medical Department of the Army for such suffering.

The following letter was sent by me to every chief surgeon of a department or independent army in the field on June 9, 1898:

"The Secretary of War has approved of the following proposition made by the American National Red Cross Association, and the chief surgeons of army corps and divisions will cooperate with the authorized agents of this Association for the purpose indicated.

"'We can put any desired amount of hospital supplies—ice, malted milk, condensed milk, Mellin's food, etc.—into any of the volunteer camps in a few hours. Will you be kind enough to bring this letter to the attention of Secretary Alger and ask him if there is any objection to our appointing a Red Cross representative to report to the commanding officer and the chief surgeons in every camp, confer with them as to their immediate needs, and, if anything of any kind is wanting, open there a Red Cross station and send in supplies? We can do this, not in a few weeks or a few days, but in a few hours, and can furnish any quantity of any desired luxury or delicacy for hospital use. We hereby tender our aid and put our organization at the War Department's service for co-operation in this field.'"

To show my cordial relations with the National Red Cross relief committee I venture to quote from a letter of August 11, received by me from Mr. Cleveland H. Dodge, chairman of the supply committee. Mr. Dodge says:

"I want again to assure you personally, and on behalf of our committee, of our earnest desire to assist you in every possible way and to thank you for calling upon us so frankly."

In a recent letter from Mrs. Winthrop Cowdin, Vice-President of the Red Cross Society for Maintenance of Trained Nurses, she says:

"We greatly appreciate your courtesy to us and feel most grateful to have been permitted to serve you in any way."

GEO. V. STERNBERG, Surgeon-General, U. S. A.

CHANGE OF ADDRESS.

Burns, E. J., from Gidding, Tex., to Sweeney, Okla. Ter.
Carveth, C. B., from West Superior, Wis., to Port Hope, Ont.
Carter, G. D., from New London, to Sayerton, Mo.
Hertel, L. L., from 2212 Dearborn Street to 3000 Groveland Avenue, Chicago, Ill.
Klein, H., from 791 So. Halsted Street to German Hospital, Chicago, Ill.
Lamb, D. H., from Owosso, Mich., to U. S. Gen'l Hospital, Ft. Meyer, Va.
McCurdy, J. G., from 136 Park Avenue to 2069 W. Congress Street, Chicago, Ill.
McDonald, H. N., from 411 9th Avenue S. E. to 901 4th Street, S. E., Minneapolis, Minn.
Russell, R., from Knoxville to Glen Mary, Tenn.
Roberts, U. R., from Littleton to 3236 Williams Street, Denver, Colo.
Spangenthal, J., from 108 E. Genesee Street to 631 Main Street, Buffalo, N. Y.
Smith, C. B., from Lovington to Sullivan, Ill.
Sheldon, J. G., from New Haven, Ia., to 204 So. Lincoln Street, Chicago.
Tyler, J. A., from 268 N. Champion Avenue to 229 N. Champion Avenue, Columbus, Ohio.
Wright, John, from Clinton, Ill., to Roseburg, Ore.

LETTERS RECEIVED.

American Sports Pub. Co., New York, N. Y.; Atkinson, Wm. B., (2) Philadelphia, Pa.
Brown, F. F., New York, N. Y.; Burns, H. H., Athol, Mass.
Clark, Dan'l. Toronto, Can.; Cheney, J. V., Chicago, Ill.
David, E. L., Louisville, Ky.
Graham, Mrs. S., Butler, Pa.
Hall, H. C., Detroit, Mich.; Hektoen, L., Chicago, Ill.; Houghton, Mifflin & Co., Boston, Mass.
Jackson, J. Arthur, Dansville, N. Y.
Kiernan, J. G., Chicago, Ill.
Merrill, Willard, Milwaukee, Wis.; Munro, A. T., Hanley Falls, Minn.; Mattison, J. B., Brooklyn, N. Y.; Mann, F. W., Detroit, Mich.; Manitou Mineral Water Co., Manitou, Colo.
New York Condensed Milk Co., New York, N. Y.; Newell & McPhail, Osseo, Wis.; Newell & Heldman, Chicago, Ill.; Newberry Library, Chicago, Ill.
Phenique Chemical Co., St. Louis, Mo.; Phillips Chemical Co., The Chas. H., New York, N. Y.; Pritchard, J. M., Yale, Ky.
Reed, R. Harvey, Rock Springs, Wyo.
Senn, N., Camp Wikoff, Montauk Point, N.Y.; Schuster, B. L., Milwaukee, Wis.; Stringfield, C. P., Chicago, Ill.; Subscription News Co., Chicago, Ill.
Thompson, J. A., Cincinnati, Ohio.
Wilkes, B. A., St. Louis, Mo.; Winter, J. H., Chillicothe Mo.